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Observations
ON
THE PRINCIPLES GOVERNING THE EARLY TREATMENT OF INFANTILE PARALYSIS.

BY
W. COLIN MACKENZIE, M.D.
(From the Laboratories of the Museum of the Royal College of Surgeons of England.)

THE treatment of infantile paralysis, being mainly a question of restoration of function, is dominated from the outset by anatomical considerations, or, to speak more correctly, by considerations which are confirmed by a study of comparative anatomy. In this paper I propose to deal with the question of treatment from the point of view of—I, Rest; II, Muscular function.

It is generally conceded that this disease is an inflammatory one, and that for the treatment of inflammation rest is essential. But rest must be immediate, since, in addition to inflammation, with the possible destruction of central nerve cells, muscle adjustments are altered as soon as the disease has begun. As I wrote five years ago:

> Since rest is the basic treatment of inflammation, only by placing the parts concerned in an anatomical position of rest—the "zero" position—can the door be closed on all sources of irritation, and the spinal cord, nerve cells, receptive centres, and muscle be placed at physiological rest; that is, only through the zero position can you offer the greatest physiological opposition to the destructive effects of inflammation.

At the outset it may be mentioned that for a proper appreciation of the principles governing rest of joint or muscle a knowledge of the writings of Owen Thomas and Robert Jones is essential. Just as John Hunter in his Croonian Lectures may be said to have laid down the basis of our true conception of the physiology of muscular action, so Owen Thomas may be regarded as the founder of the true principles by which surgical rest is effected. The great advance that has taken place in recent years in our knowledge of the biology and surgery of nerve and muscle has received its impetus from the Liverpool School of Orthopaedics.

I. ANATOMICAL REST OF THE UPPER AND LOWER LIMBS.

When we speak of anatomical rest of a joint we mean that the muscles which act on that joint have been passively controlled; a muscle is not rested unless the joint or joints with which it is in relation are rendered immobile. Resting a knee by means of plaster from the mid-thigh to the mid-leg may be "surgical" but is not anatomical. A tuberculous ankle is not at rest if the knee be mobile, nor is the knee unless the hip and ankle are fixed. In the upper extremity so fine and correlated are the muscular adjustments that adequate fixation of one joint is best secured by fixation of all three. The biceps is related to both the elbow and shoulder, and muscles acting on the wrist and fingers arise above the elbow-joint.

(*a*) *Upper Limb.*

Recumbency in bed at the outset should be insisted on. The ideal position is as follows: The thumb is adducted, owing to the importance of finger opposition, fingers slightly flexed, wrist slightly extended, hand placed midway between pronation and supination, elbow slightly flexed to relieve biceps and brachialis, and the arm abducted to a right angle or even higher to help the flexors, deltoid, and trapezius. The biceps is not rested by mere flexion, for the long head crosses the shoulder, and not only should we have flexion of the forearm but the arm raised as in deltoid cases. In other words, to speak of relaxing a biceps by means of a sling, that is, by merely flexing the forearm, is anatomically unsound. The upper limb can be immediately rested as follows:

With the child lying in bed one pillow can be placed in the axilla and, with the limb resting on another pillow, safety pins attach the sleeve of the dress to it at the arm and wrist so that the limb is abducted, elbow flexed, and the brachial plexus, being thus relieved from strain, rested.

As soon as possible a splint should be applied to give effect to the above considerations, of which the following, introduced nine years ago, is a useful model (Fig. 1). The basis is a stem of malleable iron $\frac{1}{2}$ in. wide and $\frac{1}{8}$ in. thick. This runs up the mid-axillary line from 1 in. above the costal edge to the axilla and follows the above contour of the under surface of the arm and forearm to the wrist, being bent to the requisite angle at the axilla and elbow. A piece of aluminium or tin, shaped to the hand, is attached at the wrist termination, so as to allow the mid prone and supine position, and the fingers rest on a pad of wool. Wings $\frac{1}{2}$ in. by $1\frac{1}{2}$ in. are attached at the wrist, elbow, and upper arm, and two wings pass round the chest, being attached to the stem, one at the costal extremity and the other below the apex of the axilla. The ends of these chest wings are connected anteriorly by strap and buckle. The limb is lightly bandaged on and a piece of bandage or webbing over each shoulder from the front to the back is sufficient to hold the splint well into the armpit.

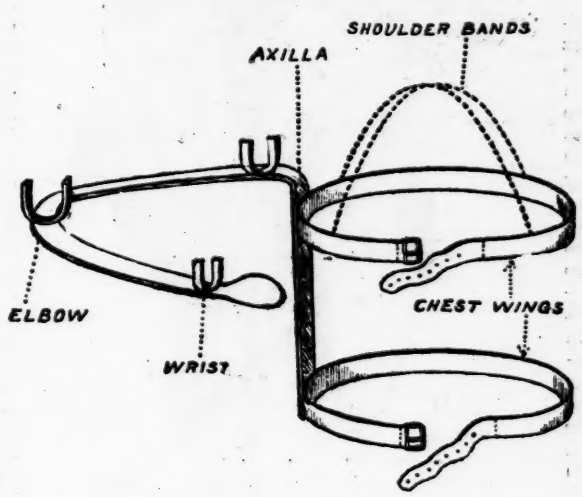

FIG. 1.—A simple upper limb splint.

(*b*) *Lower Limb.*

It is essential at the outset—even if only one limb be affected—to rest the two, as pelvic tilting the result of overaction of one side easily occurs, and once having occurred is never overcome. It is also difficult at the outset to make sure whether the abdominal muscles are affected, and furthermore, only in this way can we prevent undue rotation of the hip, abduction, or adduction, to which there is so great a tendency. Hence the importance of noting the relationship of the two anterior superior spines to the umbilicus, or, more correctly, to the mesial plane. The spines should be on the same plane.

This can be immediately effected temporarily by means of two padded boards placed behind the knee from the upper third of thigh to lower third of leg with a connecting piece across the middle—or two long back splints with foot-pieces, joined together—and permanently by a double Thomas splint. By this means also we protect the quadriceps extensor (so important for the erect position), placing a small cushion of wool under the knee so as not to overstretch the flexors. With the feet elevated on a pillow the ilio-psoas is rested.

As regards the feet, trouble is likely to arise from deformity even after the first day, and especially foot-drop, inversion, or eversion. Whatever form of foot splint is used to prevent deformity, it is essential that the foot be kept well against the foot-piece by means of a webbing or other form of strap gripping the ankle firmly. The ordinary foot-piece is usually insufficient for continuous use, and a splint modelled to the foot is best. The basis of rest is recumbency in bed, and preferably on a firm mattress.

Anatomically, then, the upper and lower limbs can be easily and should be immediately rested. If these details are attended to we have gone a long way on the road to secure a recovery. By failure to effect anatomical rest at the outset can largely be ascribed the bad results met with in this disease.

II. MUSCULAR FUNCTION.

In this section I propose to deal with the deltoid and the quadriceps extensor of the knee. The former is

generally considered the most difficult for recovery, while loss of function in the latter is responsible for the swinging limbs and crutchdom to be met with in any large city.

At the outset I wish to refer to the case of a woman who thirteen months before being seen had fallen on her right shoulder. Pain, swelling, and stiffness followed, for which massage and forced movements "to break down adhesions" were used. On examination, in spite of the fact that the head of the humerus could be rotated freely there was inability to abduct the arm, when sitting, more than 2 in. from the side. When lying down, however, with a small pad under the head, she was able to her astonishment to abduct the arm to a right angle and, though with difficulty owing to some contraction of the pectorals, to raise it above her head. The limb was placed on a splint of the type illustrated in Fig. 1 to stretch the contracted adductors. When the splint was taken off she was still unable to abduct the arm when sitting up, but on lying down she raised it above the head with ease and in two days was able to raise it not only when lying flat, but also when the head was elevated on a pillow. Within a fortnight she was able to raise the hand above the head when sitting up, having during that time been gradually raised by pillows to the erect position, the movements each day being commenced in the lying down or zero position. A week later she was able to raise the arm immediately on sitting up.

Furthermore, cases of quadriceps "paralysis" were met with in which the patient was unable to stand, or, when lying in bed, raise the heel with the knee extended; yet when he lay on the side opposite to that which was affected and the knee was acutely flexed the leg could be extended with the greatest ease. Because the patient is unable to raise the heel off the ground with the knee straight when sitting on a chair—is unable, that is, to do 100 units of work—we are not justified in calling the quadriceps "paralysed." On the same reasoning the quadriceps tested with the patient in bed and the knee acutely flexed might be regarded as normal since it can perform the functions of the quadriceps as given in the textbooks, that is to say, extension of the knee.

These phenomena admitted, of course, of only one explanation—namely, that the disease was revealing functional stages in the evolution of these muscles. They showed clearly that their action was a complex function, one made up of several separate activities, and hence the term "paralysis" of muscles is really referable to the loss of some, not necessarily all, of their functions; the recovery, like the loss, follows in a biological or evolutionary sequence.[1]

The dominant factor in man is the erect position, and the study of muscular action throughout the mammalia shows that orthograde functions have been superimposed on muscles adapted originally for plantigrade motion; new muscles have not been called into being. Although Charles Bell taught us that the anterior cord presides over muscular action, and Marshall Hall that movement can occur reflexly from irritation independently of volition, a study of cases of infantile paralysis in man—regarded as the most advanced mammalian type—demonstrates the fact also that the anterior cord not merely presides over "muscular action" but recognizes the components of which the function is made up, and that these cell-controlled components always bear a definite sequence one to another. Though similarly placed in an anatomical sense, the action of the quadriceps is vastly different in platypus and in man. The quadriceps in platypus responds to the anatomical test of extension of a flexed knee, but that is a different function from that of a quadriceps which will allow of the orthograde posture. The quadriceps of the ape has a more complex function than that of the platypus, and so similarly has man's compared with the anthropoid. A patient who can raise the heel off the ground when sitting with the knee extended will be able to extend the acutely flexed knee in bed; but the patient who can do the latter need not necessarily be able to do the former. When, therefore, we are told that the quadriceps is paralysed merely because the patient is unable to raise the heel off the ground we are told something which is biologically unsound. This is a question apart altogether from volition, since in infantile paralysis we are dealing with a disease in which, generally, cerebration is unaffected.

In the koala we see a typical exhibition of deltoid function amongst the marsupials. Compared with the wombat the deltoid in the koala has become differentiated from the outer pectoral, trapezius, and brachio radialis (Fig. 2). Although the koala in the fork of a tree, supporting himself with one hand, can reach for his eucalyptus leaf, that is a different matter from the ability to raise the arm when in the orthograde posture.

Again, a study of the anthropoids at any menagerie shows the reluctance with which the fore limb is dispensed with as a means of support. The ape prefers the knee slightly bent, with the balance afforded by one or both fore limbs. To assume the orthograde posture is an effort, and a still greater one while so supported to raise the fore limb above the head. The stiffening of the knees by the quadriceps, which has enabled man to stand and walk; and the ability not only to dispense with the fore limb for support, but to elevate it when erect above the head, are late acquisitions in man's evolution, and are hence unstable.

FIG. 2.—Deltoid evolution in the marsupials. The shoulder region of the Australian koala (*Phascolarctos cinereus*). P, Pectoralis major. D, Deltoid. T, Trapezius. R, Triceps. B, Brachio-radialis. H, Biceps.

Compared with embryology, which gives us an imperfect picture of man's evolution from the point of view of structure, comparative anatomy not only gives a correlated history of the past, but often points the directions in which man's future physical evolution may progress. As an example, it will be conceded that inversion or eversion of the human foot are diminishing since the foot is not, as in koala, provided with an opposable hallux, that the tibia is the dominant bone, and that the fibula is disappearing. The fibula in the kangaroo, from the point of view of function, is non-existent, having become approximated to the tibia, reminding one of the manner in which the appendix has become fused with the ileum in the wombat. In the kangaroo a struggle exists round the ankle as elsewhere, between individual muscles, not only for position but for existence. The kangaroo's foot can be regarded, then, as of especial value in enabling us to recognize that certain muscles are "survival results" (Fig. 3). Even if the "paralysed" patient be treated at a stage of the disorder where some surgical interference is necessary, the comparative method of treatment still dominates the surgeon's action—whether the method be the "strengthening of the weak" by muscle or nerve transplantation, or the "weakening of the strong," as by tendon lengthening or division. If we are utilizing a tibial or peroneal muscle for grafting, it is important to know which tibial or which peroneus is the more useful in the body economy; and similarly, if we are diminishing the power of eversion because the tibials are weak, or inversion because the peronei are damaged.[2] The results obtained from nerve and muscle grafting in paralysis have so far been disappointing, and for the reason that muscle function—the important factor—receives such scant consideration. It seems ridiculous to graft a biceps femoris or other hamstring to the quadriceps and expect it to restore extension—that is, to repeat the biological history of the function of that muscle—unless we have a clear idea

of the entities of which that function is composed. Again' presuming we have reinforced the circumflex nerve of a paralysed deltoid, it is surely too much to expect that nerve impulses will stimulate the muscle to repeat in sequence the events of its evolutionary history. When we speak of successful restoration of function of the deltoid, do we refer to 10 units of work or 100 units—that is, orthograde abduction?

To give a complete biological history of the action in orthograde man of the deltoid and quadriceps is not possible. Links in the chain are missing, and even the gap between two members of one order—namely, the wombat and koala—cannot be filled. From researches on muscular action amongst the mammalia, and especially monotremes and marsupials, extending over the past eight years, together with studies on numerous cases of human paralysis, I have adopted the following principles in seeking to restore function in a case of paralysis affecting the quadriceps or deltoid muscles.

A paralysed limb should be handled with the greatest gentleness, and, when taken off the splint, should occupy at first the position it had when supported by the splint. The arm with a paralysed deltoid should not be allowed to drop when taken off the splint, nor a knee be bent up, nor allowed to hang over the edge of the bed. We should avoid movement just as much as in the case of a fracture of the humerus or of the femur. Hence also the importance of a firm bed, so that movements can be carried out without disturbing the patient. It is best to place a sheet of cardboard under the limb to obviate all resistances to movement.

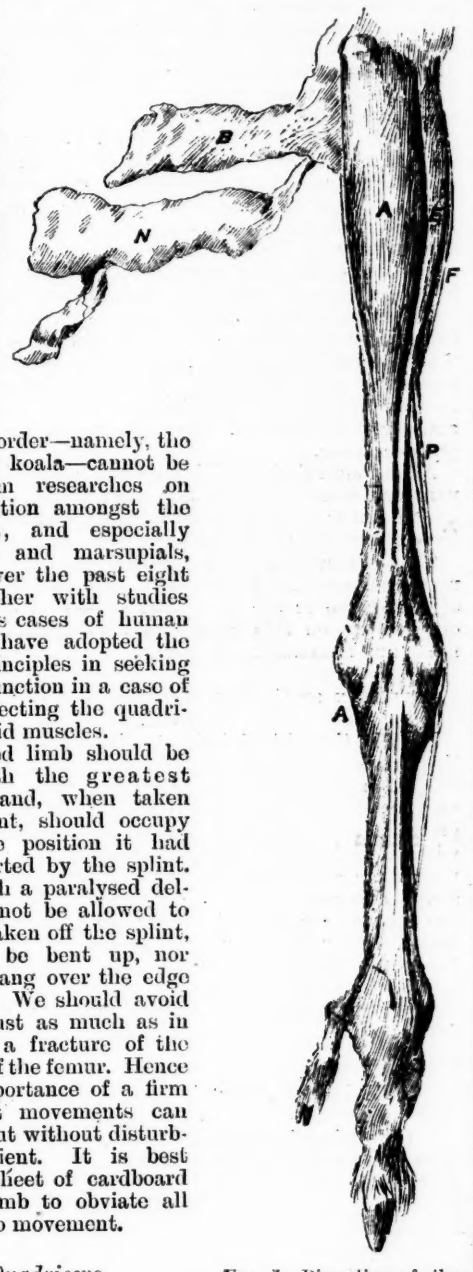

FIG. 3.—Dissection of the extensor aspect of the leg in the kangaroo (*Macropus gig.*), showing the tibialis anticus as the "selected" inverter. A, Tibialis anticus. E, Common extensor. F, Common flexor. P, Peronei. N, Semitendinosus. B, Semimembranosus.

(*a*) *Quadriceps.*

The maximum work—namely, 100 units—is represented by the ability to stand erect with the knees straight, or to raise the heel off the bed when lying with the knee extended, and similarly when sitting on a chair. The minimum is represented by the ability to straighten the knee without abduction with the patient on the back and the knee slightly bent, actively or passively. On flexing the leg, for example, 1 in., it may be noticed that the limb falls straight, or, if bent say 3 in., the patient may be unable to straighten the knee, but can prevent the limb abducting; that can be regarded as evidence of recovery. The flexion is gradually increased, the fall being gradually replaced by a definite push, till finally the patient, holding the knee in the position of acute flexion without abduction or adduction of the thigh, is able to straighten the limb. It may be necessary to initiate action with the patient lying on the opposite side, and not on the back, beginning with a 2 in. flexion, and in this early movement hip action is unhindered. An early sign of recovery is the power of adduction or abduction of the whole limb when on the back with the knee straight, especially the latter. Progress can be stimulated by bandaging a splint to the back of the knee.

Our next endeavour is to secure extension from full flexion when lying on the opposite side, with the thigh fixed. This is accomplished by beginning with, say, a 2 in. flexion and gradually increasing, always commencing each day, however, at the 2 in. stage. It is wrong practice to flex the knee beyond a point at which extension effort becomes manifest. The action is aided by allowing the patient to flex and extend the knee when on the side, but with the thigh free.

The time now comes when our attention is directed to the power of raising the heel off the bed from the hip with the knee extended. To our surprise the patient, when lying on the sound side, may lift the limb in one piece and swing it forwards and backwards with ease. This is an action of the ilio-psoas muscle, but is only rendered possible by the action of the quadriceps extensor in keeping the knee stiff. If unable to do this we can initiate and practise the movement with the knee stiffened by a cardboard or wooden splint behind the joint—that is to say, we produce an artificial quadriceps. Objection may be raised that the elevation of the limb in one piece when on the side is dependent on the stiffening action of the lateral ligaments. It is, however, a distinctly muscular action, and ligaments do not cause movement. This can be proved in the case of a severe quadriceps paralysis when the patient with a sound ilio-psoas will make unsuccessful efforts to raise the heel when on the side, the knee remaining bent; but when a splint is applied behind the knee will lift the limb with ease. Although able to raise the limb in one piece when on the side, yet when turned on the back this, which is the maximum effort, is impossible. The graduated method is again applied. We gradually alter the tilt of the body, which can be done by means of a pillow, from the lateral to the supine position, till finally our maximum of 100 units of work is reached. If, when seen, the knee has flexed from over-strong hamstrings, it should be straightened and bent gradually, before true function is commenced. The two actions should go *pari passu*, and as already stated there should be no flexion beyond the point at which extension-effort has become manifest.

(*b*) *Deltoid.*

With the patient on his back in bed and a low pillow supporting the head we may find that he lifts the abducted arm readily off the cardboard, or if passively raised is able to maintain it so. Our object is to recover the power of abduction from the side to the right angle. If we lower the arm from the right angle abducted position to the side, the patient is unable to abduct to the right angle; but if we lower it, say, two inches, supporting the patient's elbow on the palm of our hand, it may be raised to the right angle readily. We gradually lower the supported elbow, beginning each day at our original minimum, till finally there is abduction with the arm at the side. There will be recovery in this posture when the patient can abduct to the right angle *ab initio* with the arm at the side. This procedure is then repeated with the patient slightly raised by means of an ordinary pillow under the head, and in this manner he is gradually elevated to the orthograde or erect posture. The 100 units of work or maximum have been achieved when the patient is able, when sitting up, to straightway abduct the arm from the side to a right angle. Similar principles would apply in cases of nerve injury, or injury of the muscle with loss of function. The results presented at the Berlin Congress in 1911 by Mayer of Cologne, and based on an early paper of the writer's on upper limb paralysis published in Australia, are worthy of notice.[3]

The dissections shown in the figures, together with numerous others, illustrating the evolution of muscular action in the mammalia, are now in the possession of the

Hunterian Museum, London. For valuable help in the preparation of these I am indebted to Major C. V. MacKay, R.A.M.C.

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THE MODERN TREATMENT OF DIABETES MELLITUS.

AN ABSTRACT OF THREE LECTURES DELIVERED AT THE LONDON HOSPITAL.*

BY

O. LEYTON, M.D., D.Sc., F.R.C.P.,

PHYSICIAN TO THE HOSPITAL.

A FEW weeks ago the following dialogue might have been heard in the staff room of the London Hospital:

Surgical Colleague: I see that you are lecturing on the modern treatment of diabetes; now, tell me, are you going to tell us anything which I was not taught as a student?

Leyton: I believe so.

S. C.: Is there some new drug which possesses a specific action?

L.: Not that I know of.

S. C.: Then tell me in a nutshell the difference between the modern treatment and that which I was taught.

L.: You were taught that so long as a diabetic was placed on a diet which was free from carbohydrate all was being done that could be done. The main idea in the modern treatment is that a period of alimentary rest leads to an alteration in the metabolism of the diabetic which makes it approach that of the normal individual. A patient suffering from severe diabetes is unable to metabolize the carbohydrate part of the protein molecule; after alimentary rest, he is able not only to utilize all the protein but also to oxidize carbohydrate given in the food as such. This tolerance for carbohydrate is developed. Limits for protein and fat are found, and these forms of food are not given in unlimited quantities. Too much protein causes a return of sugar in the urine.

S. C.: Does the new treatment really allow you to prolong the lives of young individuals who have developed severe diabetes?

L.: Undoubtedly.

It is this treatment which I wish to describe in sufficient detail to permit all to test the accuracy of my replies in the conversation.

Diabetes mellitus is the name given to a series of diseases which may be recognized by a departure from the normal metabolism. The change which makes itself most evident is the excretion of dextrose in the urine in quantities which may be detected by the ordinary tests whilst a normal diet is being taken. It is true that sugar appears in the urine in meningitis, exophthalmic goitre, and in gross diseases of the pancreas; these do not come under the heading of diabetes mellitus.

The definition given above includes so-called "dietetic glycosuria." Without wasting time in an academic discussion as to whether such a disease exists, let us assume that it is safer to consider all cases of glycosuria to be diabetes mellitus and treat them as such. No harm will be done and many lives will be prolonged.

The causes of diabetes mellitus are not known. Perhaps it will assist us to understand the modern treatment if we adopt a speculative explanation of its cause, even if this subsequently be proved incorrect. Diabetes mellitus includes at least three conditions:

1. Sugar in the urine with an increase in the sugar in the blood.

2. No sugar in the urine (at times) with a considerable increase of sugar in the blood.

3. Sugar in the urine without any increase of sugar in the blood.

The two conditions first named are in my opinion due to an altered nerve control of the pancreas, whilst the third is due to the production of a phloretin-like body in some of the tissues.

The similarity between diabetes mellitus and exophthalmic goitre leads me to think that an altered nerve control plays an important part. Cannon has shown that if the central end of the phrenic nerve be sutured to the peripheral part of the cervical sympathetic, the nerve grows down, and then the impulses which would have been transmitted to the diaphragm at every respiration are conducted to the thyroid gland, with the result that the animal develops all the signs and symptoms of exophthalmic goitre.

Partial excision of the pancreas produces an effect in an animal simulating in many ways diabetes mellitus. Nevertheless, from *post-mortem* examinations, we know that in the majority of diabetics no recognizable lesions are found in the pancreas.

There are many other possibilities. In normal health there is a balance between all the tissues in the body; any departure from this balance is compensated rapidly. Emotions cause a temporary alteration in the balance. Anger and fright stimulate the suprarenal glands, causing the sugar in the blood to be increased, the blood to coagulate more rapidly, the bronchioles to dilate, the muscles to become fatigued less easily, digestion to be inhibited, and the blood to be redistributed in the body. Cannon explains these changes as those which would assist an animal to fight successfully, and that these emotions were originally associated with struggle. Indirectly the same emotions increase the rate of metabolism through the increase in activity of the thyroid. Emotions have a direct effect upon glycosuria too.

Allen found that small highly bred dogs, if a part of the pancreas were removed, and the animals put upon a diet which under ordinary conditions allowed them to be free from glycosuria, passed sugar in the urine when frightened.

This observation upon animals, and many similar upon man, suggested the possibility that hypnotism might prove of assistance in the treatment of severe diabetes. Our observations on this matter are insufficient to allow me to make any announcement to-day.

SELECTION OF CASES FOR TREATMENT BY "ALIMENTARY REST."

If it be thought advisable to give a treatment a descriptive name rather than that of its inventor I suggest that the Allen treatment be called the "Treatment by Alimentary Rest," for three reasons: (1) It seems to me probable that the alteration in metabolism which occurs when food is withheld is due to rest of the various glands which are stimulated during digestion, and not to the simple absence of food. (2) To prevent confusion between the Allen treatment and the Guelpa treatment, which has been called "the starvation treatment" for quite a long time. (3) Starvation treatment is a name which does not commend itself to patients.

Since the treatment entails alimentary rest for several days it is obvious that not every case should be submitted to it.

Method of Determining Suitability of Case.

(a) Physical.

If the patient be suffering from any other disease which is likely to lead to dissolution during the next few months he should not be asked to undergo the discomfort of alimentary rest because the recompense for the self-denial is too small.

My experience† has taught me that, in spite of the fact that not infrequently a patient suffering from rapidly progressive pulmonary tuberculosis may lose the sugar in the urine as the disease progresses, nevertheless cases of diabetes complicated by pulmonary tuberculosis are not suitable for treatment by the Allen method.

Every effort must be made to be certain that the patient is not suffering from active tuberculosis. We all know that often it is extremely difficult to make up our minds on the diagnosis even when uncomplicated; when diabetes is present the difficulty is increased ten times. Many of the more delicate tests prove fallacious.

The rise of temperature with exercise will not necessarily take place in a diabetic. Tuberculin may not be used because any man who awakens quiescent tuberculosis in a diabetic is guilty of manslaughter.

The examination is limited to inspection, palpation, percussion, auscultation, and radiography. Even the most careful and experienced may err when limited to these

* The lectures will appear in detail in the *Clinical Journal*, March, April and May.

† Joslin's experience is not similar.

methods of examination. When examination of the sputum proves the presence of acid-fast bacilli nothing more need be said.

Other forms of infection must be sought for and dealt with as far as possible before treatment is begun.

Especial attention should be paid to the gums; pyorrhoea alveolaris is extremely common in diabetics, possibly because they have a poor resistance to most infections. In several cases removal of infected teeth and treatment of the gums without any modification in diet has led to the disappearance of even high percentages of sugar from the urine.

It is wise to remember that very severe cases of very long standing require a slight modification of the routine treatment.

(b) Mental.

Patients of no education who have not been taught control are unsuitable. They prove a trial to their physician and do not keep to the diet after they have left the institution in which they have been treated.

A short time ago a young Irish soldier, who had escaped school in the past, was admitted to one of my wards. I attempted to explain to him in simple language that he was suffering from a disease which would kill him very soon if he did not consent to undergo certain treatment. That, unfortunately, the treatment was one which would not allow him to have very much food for some time, and that his rations of potatoes would have to be small for several months. After listening patiently, he said, "Ma faythers never did belave in doctors." The poor man left the hospital and died a short time later.

The physician must use judgement and remember always that a patient who begins the Allen treatment and does not continue it is worse off than if he never attempted it.

The method of persuading the patient to undergo the treatment must depend upon the temperament of the patient. The doctor who has seen many cases which have been pronounced hopeless, become free from sugar and return to their normal work will feel justified in painting the future upon the old treatment in its true colours. Perhaps any one with but little experience may not feel justified in doing this, because he is afraid of frightening his patient.

When a patient has consented to undergo the treatment he will ask, "How long shall I have to go without food?" An answer to this question is not easy. It is quite certain that the length of the period does not depend upon the percentage of sugar in the urine.

I am under the impression that the greater the percentage of sugar in the blood the longer the fast required; in all probability future experience will show that this has many exceptions. Some months ago two cases were admitted to the same ward upon the same day—a girl of 16 passing 12.3 per cent. sugar in the urine, and a woman, aged 35, passing 1.25 per cent. sugar. The blood of the young girl contained 0.15 per cent. sugar, whilst that of the woman contained 0.5 per cent. sugar. The girl's urine was free from sugar after alimentary rest for forty hours, whilst the woman had to fast six days before the glycosuria disappeared.

METHOD OF TREATMENT.

If the patient has developed diabetes comparatively recently a diet poor in fats is ordered for two days preceding the period of alimentary rest. This may consist of the same diet as the patient has been accustomed to with the exclusion of butter and fat meat.

Usually I order a breakfast of weak tea with very little milk, two eggs with a small piece of bread; lunch of 100 grams of lean meat, 200 grams of cooked cabbage, 60 grams of boiled potatoes, and a small baked custard pudding. Dinner, a plateful of clear soup, 120 grams of fish, other than salmon, herring, or mackerel, 120 grams of cooked green vegetable, an egg and an orange. In exceptional cases of very long standing and severe acidosis, it is wiser to diminish gradually the protein and carbohydrate after removing the fat before submitting the patient to alimentary rest.

Let me warn you against giving a favourable prognosis to patients who come with a history that for years they have passed sugar in the urine and carried on their work in comfort until a few weeks ago, when they began to be tired and to lose weight and become rather more thirsty than in the past. This sudden alteration often indicates the awakening of tuberculosis; tuberculosis in diabetics may take months to show signs.

During the period of alimentary rest the patient receives a Seidlitz powder every morning, and if that does not prove sufficient it is supplemented by castor oil or an enema. He is kept in bed, but allowed to leave it for the morning bath and for calls of nature. It has been asserted that the sugar disappears more rapidly from the urine when the patient is allowed to take exercise; this assertion is not easily proved, and even if it were established beyond doubt, one would have to weigh the relative advantages of shortening the period of alimentary rest and the complete control over the patient. In my opinion complete control is the more important.

The patient should be shielded from all worries and annoyances. Diabetics are short-tempered, and therefore every device must be adopted to meet their wishes whilst under treatment.

During the period of alimentary rest the patient is allowed at breakfast time 200 c.cm. of weak coffee without milk or sugar, and 100 c.cm. of clear broth made with an eggspoonful of a meat extract which is poor in protein. At lunch he receives the same as for breakfast. At tea, 200 c.cm. of weak tea. At dinner, 200 c.cm. of weak tea and 100 c.cm. of clear broth. As much water and soda water as desired is permitted. If the patient is accustomed to alcohol, he is allowed the usual amount unless it is really excessive. If not accustomed to any, then alcohol should be given only in cases of severe acidosis or extreme emaciation.

I advise you most strongly to note down every detail, even as to the method of preparing tea and coffee, otherwise you will find your patients being given solutions of sugar, burnt and unburnt, instead of coffee.

The twenty-four-hour specimen starting from 8 in the morning is tested for sugar at 8.30 every morning with Benedict's solution,* or with the indigo test; when it is found free from sugar, we conclude that the metabolism of the patient has altered, and the following progressive diet is begun:

The first day after the urine is free from sugar the diet should contain 5 grams of carbohydrate; this might be given as a quarter of an ounce of white bread, but that would not be satisfying, nor would it tend to alleviate constipation. A vegetable containing a considerable quantity of cellulose and little carbohydrate is chosen in order that the pangs of hunger may be assuaged by the bulk of the meal, and at the same time the intestine stimulated by the residue of the food.

When in season French beans are the most convenient, because they contain less than 2 per cent. carbohydrate, and 250 grams would be allowed on the first day. When French beans are not obtainable, cabbage boiled in three waters and then stewed in a little clear broth may be used as a substitute; or, if the patient is unable to eat cabbage, 230 grams of cooked spinach, or 200 grams of raw lettuce, or 140 grams of celery may be substituted.

The urine is examined every morning, and, if free from sugar, the diet for the day is given.

DIET FOR ESTIMATING TOLERANCE.†

First Day.—Breakfast: Weak coffee 200 c.cm., cooked French beans 75 grams. Lunch: Weak coffee 200 c.cm., French beans 100 grams. Tea: Weak tea 200 c.cm. Dinner: Weak tea 200 c.cm., French beans 75 grams.

Second Day.—The quantity of vegetable is doubled, and three eggs are added to the diet.

Third Day.—200 grams of lettuce replace 200 grams of French beans, and another 200 grams of French beans are replaced by an equal quantity of boiled cucumber.

Fourth Day.—200 grams of cabbage boiled in one water replace 200 grams of cucumber.

Fifth Day.—30 grams of lean meat are added to the diet along with 200 c.cm. of clear broth.

Sixth Day.—Breakfast: Weak coffee 300 c.cm., with thin cream 10 c.cm., one egg, and raw lettuce 200 grams. Lunch: Lean meat 100 grams, cooked French beans 200 grams, boiled potato 40 grams. Tea: Weak tea 300 c.cm., thin cream 10 c.cm., one egg. Dinner: One egg, cooked cabbage 100 grams.

* Copper sulphate 18 grams, sodium citrate 180 grams, sodium carbonate crystals 200 grams, water 1,000 c.cm. Boil 5 c.cm. with 5 drops of urine for two minutes and allow to cool; if solution remains clear, sugar is absent.

† The daily diet appears in detail in the *Clinical Journal* (April), and will be obtainable (printed on separate sheets) from Messrs. Adlard, 23, Bartholomew Close, London, E.C.

Seventh Day.—A fast day.

Eighth Day.—30 grams of cooked fat bacon replace 30 grams of lean meat.

Ninth Day.—30 grams cooked fat bacon replace 15 grams of lean meat, 15 grams of boiled potato added.

Tenth Day.—30 grams of fat added.

Eleventh Day.—Breakfast: Weak coffee 300 c.cm., thin cream 15 c.cm., one egg, cooked fat bacon 30 grams, raw lettuce 200 grams. Lunch: Cooked lean meat 20 grams, fat 15 grams, cooked French beans or their equivalent 120 grams, boiled potato 60 grams, butter 15 grams. Tea: Weak tea 300 c.cm., cream 15 c.cm., boiled potato 30 grams, butter 15 grams. Dinner: Clear broth 200 c.cm., one egg, cooked cabbage 100 grams, cooked French beans 100 grams, butter 30 grams.

Twelfth Day.—Add fat 30 grams.

Thirteenth Day.—Add white bread 15 grams, subtract raw lettuce 120 grams. Add white bread 15 grams at tea, and subtract 30 grams of potato at lunch. Add butter 15 grams.

Fourteenth Day.—A fast day.

Fifteenth Day.—Breakfast: Coffee 300 c.cm., cream 20 c.cm., one egg, cooked fat bacon 30 grams, raw lettuce 100 grams, white bread 15 grams, butter 15 grams. Lunch: Cooked lean meat 60 grams, fat 30 grams, cooked French beans 120 grams, boiled potato 30 grams, butter 60 grams. Tea: Tea 300 grams, white bread 15 grams, one egg, butter 30 grams. Dinner: Clear broth 200 c.cm., one egg, cooked cabbage 120 grams, boiled potato 30 grams, butter 60 grams.

The diet on the fifteenth day represents carbohydrate 42 grams, protein 54 grams, fat 192 grams. Note that the carbohydrate is fairly well divided: Breakfast 12 grams, lunch 8 grams, tea 9 grams, dinner 13 grams. The energy provided by the diet is calories 2,112, sufficient for an average man who is not doing any manual work. If sugar remains absent the diet is altered by the addition of 3 grams of carbohydrate daily with a diminution of 6 grams of fat.

Every seventh day should be a fast day or a half-ration day; in the milder cases half-ration days suffice.

Under no conditions be influenced by the old-fashioned idea and add to the protein in the diet; if you do, quite frequently sugar will return, and you may think that it is due to the increase in carbohydrate and diminish it in error. This means that no so-called antidiabetic bread or biscuits may be given.

When we wish to reduce the weight of obese patients we give them an excess of protein; this applies to diabetics too, an excess of protein causes them to lose weight. Many years ago I found that by substituting cellulose, which is not absorbed, for protein patients stopped losing weight.

There is nothing gained by giving oatmeal instead of bread; as long as the carbohydrate is starch and not sugar its absorption is fairly slow; the type of starch makes no difference.

Various diets suggested during the last few months have the same underlying idea, although the authors of the diets frequently do not seem to recognise it—namely, the diminution in the quantity of protein.

The problem arises, What should be done when the sugar returns? The patient should fast until the sugar disappears; as a rule twenty-four hours suffice. Then one of two methods may be adopted: the progressive diet may be followed, but at double the previous rate, until the carbohydrate reaches two-thirds of that at which sugar returned, and then fat is added until the necessary amount of energy is being taken. Or the diet is halved, then the protein is rapidly increased up to the amount it was when sugar appeared and the fat increased at the same time. The carbohydrate is gradually increased until it reaches two-thirds of the amount that led to the return of sugar.

We must realize that protein and fat in excess will both lead to the reappearance of sugar in the urine.

The reappearance of sugar after some time without any alteration in the diet does not necessarily mean that a fresh period of alimentary rest need be prescribed, or even that a modification in the diet is essential. Some emotional disturbance may have led to glycosuria. Amongst my patients is a woman who has a return of glycosuria whenever the interval between letters from her son, who is fighting in France, is more than five days. Mental perturbation does not always lead to the same result. A severe case of diabetes, whose carbohydrate limit rose to 60 grams of carbohydrate, had bombs dropped in his garden on two occasions, he lost his brother, sister, and wife all within three months, but he did not have a return of sugar.

Exposure to cold, anxiety about catching a train, and many other minor things may lead to the return of sugar, and should be inquired about before any alteration in diet is ordered.

In olden days much attention was paid to the weight of the patient, and the unwarrantable assumption was made that so long as the weight was maintained all was well with the patient. Try and make your patients believe the truth, that the weight is of comparative unimportance, that no diabetic has ever faded away. Make them exchange an interest in weight for one in the result of the test of the urine with Benedict's solution.

As a rule the gain in weight when the patient is upon the optimum diet is very slow, perhaps a few ounces a week. In the majority of cases a rapid increase means that oedema is developing. An exception came my way a short time ago in a man who had gained 17 lb. in six weeks. For two years he had been upon the old-fashioned treatment, and had become a skeleton, and a weak skeleton at that. The death of his medical adviser had led to his adopting the Allen treatment. He emphasized the rarity of the rapid increase in weight with completely beneficial results by making a somewhat unusual remark: "My doctor died; if he had not, I should."

In the past diabetics were not allowed to take much exercise, because it was thought that exercise would lead to loss of weight. It is found that a moderate amount of exercise allows the patient to metabolize more carbohydrate, and exercise is now ordered; the amount taken should be the same every day, otherwise it must be remembered that upon those days when less exercise is taken less carbohydrate must be included in the food.

The results obtained are better than those by any method adopted to date. You must remember that the treatment is not a cure, but that when carried out in the best possible manner a diet is found which allows the patient to live indefinitely, and to lead a useful life. Perhaps a cure will be discovered during the next few years which will allow us to permit the patients whom we have kept alive to return to a normal diet.

The treatment has not been in use long enough for us to have decided whether the carbohydrate tolerance gradually increases. In some cases I believe there are indications of this.

Young people who have developed the condition comparatively recently derive the most benefit from the treatment.

Of the seventy cases of severe disease which have come under my observation four have died from tuberculosis. These led me to exclude those who showed signs of that condition. I hope shortly to record what I believe to be the most satisfactory treatment when tuberculosis is present.

One patient died from pneumonia, two from gangrene which had started some time before they came under treatment. Four patients died within a day or two of admission to the hospital.

The majority are enjoying good health, and many are asking why they were not put upon the treatment a long time ago.

CARDIAC DISEASE IN SOLDIERS AND RECRUITS.

BY CAPTAIN W. SCARISBRICK, R.A.M.C.(T.).

THIS article has been written with the purpose of comparing the incidence of heart disease amongst soldiers and recruits, and embodies my personal notes. The great majority of the soldier cases had been on active service abroad, and included all degrees of severity of heart disease; the recruit cases also formed a fair representation of the different types of cardiac affection.

Notes of 218 cases of heart disease occurring amongst soldiers and 151 found amongst recruits have been collected; they have been classified into five broad and fairly distinct groups. These groups were selected because, whilst being sufficiently comprehensive, it was considered that classification in this manner should not prove too difficult, and the choice of treatment and the prognosis as to future utility would be moderately easy.

A few words of explanation as to the reason for assigning individual cases to a particular group may be useful. In the main, clinical and general signs, symptoms, and

previous medical and general history were the factors which decided the group in which any particular case was classified. Many of the soldier cases were, however, admitted to hospital, and kept under continuous observation. Subjective sensations received careful consideration, and it was found necessary in several instances to discount in a great measure symptoms complained of. In some cases important signs and symptoms were present indicating that such cases might be classified in more than one group—for example, where there was definite evidence of myocardial affection together with general neurosis, or where there was a positive history of severe strain accompanied by neurosis. Such cases were classified according to the predominant signs and symptoms found.

GROUP 1.—*Organic Valvular Disease.*

This group includes those cases, and those only, in which definite organic disease of one or more sets of cardiac valves could be diagnosed. A few cases of pericarditis, generally accompanied by some degree of organic valvular disease, and having the etiology of the latter, are included in this group. A definite history of one or more attacks of rheumatic fever was obtained in the majority of the cases, and in the remainder a history of scarlet fever, pneumonia, chorea, or influenza. In several cases giving a history of influenza the cardiac changes were so great as to suggest that rheumatic fever might in these instances have simulated an attack of influenza.

GROUP 2.—*Myocardial Disease.*

The chief signs and symptoms of cases in this group were as follows: The subject was pale, thin, and evidently weak. He complained of being very short-winded and of suffering from palpitation and fluttering sensations in the chest. In many instances sleep had been disturbed for a long time; the patient frequently woke up with a distressing feeling of breathlessness. In no case could any but the lightest form of work be performed. The pulse was soft, fairly rapid (90 to 110, or over), even after resting, and frequently irregular, without evidence of a predominant rhythm. The apex beat was nearly always found outside the nipple line, but usually in the fifth interspace, and the lateral limits of cardiac dullness were extended beyond the normal on both sides; this extension was increased after moderately severe exercise. The cardiac sounds were soft and lacking in muscular tone, and there was shortening (absolute) of the ventricular diastolic period. A blowing systolic bruit was present over the mitral area, and was usually transmitted towards the axilla. A soft systolic bruit was also frequently present over the aortic area. Premature systoles were heard in several cases. In a considerable number of cases a moderate degree of arterio-sclerosis was present.

A history of either pneumonia, scarlet fever, influenza, diphtheria, chronic rheumatism, or alcoholism was obtained. In one case the patient previously suffered from plumbism, but in no instance was a history of rheumatic fever given.

GROUP 3.—*Strained Hearts.*

The border-line between hearts having no organic disease but suffering from overstrain and certain types of cardiac neurosis is very indefinite. In some cases of cardiac strain there is accompanying neurosis, especially amongst soldiers returned from the front. Again, a heart weakened through myocarditis in the first place may be subjected to severe strain causing an exaggeration of the symptoms. In cases of strained heart the individual may be either well developed or have poor musculature. The subjective sensations in the majority of cases examined were only slight, but it was noted that, after certain forms of severe exertion which a patient was originally able to perform with impunity and ease, breathlessness and palpitation became marked. In a few, mainly young subjects, palpitation was present after only slight exertion. In most cases the pulse was regular, of good volume, and of normal rate. The apex beat was felt in the nipple line or just outside, and occasionally in the sixth interspace. The normal limits of cardiac dullness were only slightly extended, and there was no increase after exertion. On auscultation, the heart sounds were good as regards muscular tone, and a mitral systolic bruit, not so soft as in myocardial disease and yet not rough as in organic valvular disease, accompanied the first sound. Occasionally, reduplication of the first sound at the apex was present and also premature systole. In several instances where premature systoles were present whilst resting they were found after exercise to have disappeared. A systolic murmur was heard over the pulmonary area in some instances.

There was no history of any of the specific fevers (including rheumatic fever), tonsillitis, or chorea. Several had been athletes and all had been subject to severe muscular strain at some time or other. A number of the soldier cases had been gassed at the front.

GROUP 4.—*Cardiac Neurosis.*

In cases of neurosis, either general or cardiac, we are dealing with a factor which is most intangible and exceedingly difficult to estimate. In consequence of interference with the cardiac mechanism the heart fails to beat with perfect normality and various subjective sensations are present. Clinically two types were met with: (*a*) Those in which the cardiac sounds were weak, irregular, and rather rapid, a soft systolic bruit usually accompanying the first sound at the apex; the patient was poorly developed and showed general nervousness. (*b*) Those in which the cardiac sounds were exaggerated in muscular tone and the only other abnormal sign present was tachycardia. After exercise both types showed a marked increase in the rate of cardiac contraction but no dilatation or increased cardiac dullness. An endeavour was made to find some underlying cause for the cardiac neurosis. In most of them no history could be obtained of previous illness, although in some cases a family history of cardiac disease was given. In several cases, both soldiers and recruits, excessive tobacco-smoking was certainly the cause of the trouble, whilst in others slight enlargement of the thyroid, accompanied by signs of hyperthyroidism, accounted for the neurosis. In several instances drug taking was suspected, and in three cases admitted. Having eliminated all these, there still remains a certain proportion of the cases of cardiac neurosis without any definite assignable cause; these are referred to by some clinicians as "irritable hearts."

GROUP 5.—*Alleged Cardiac Disability not Found.*

Under the conditions existing at the present time the question of simulation of heart disease has become most important. Cases classified in this group comprised malingerers and one or two cases with cardio-respiratory murmurs. Many men who thought they had a weak heart, but who were found to be perfectly normal, are not included.

TABLE I.—*Numbers of Soldiers and Recruits in the Different Groups.*

	Soldiers.		Recruits.	
	No.	Percentage of Heart Cases.	No.	Percentage of Heart Cases.
Group 1. Organic valvular disease	88	40.4	59	39.1
Group 2. Myocardial disease ...	34	15.6	33	21.8
Group 3. Strained hearts ...	58	26.6	23	15.2
Group 4. Cardiac neurosis ...	32	14.7	27	17.9
Group 5. Alleged cardiac disability not found	6	2.7	9	6.0
	218	100.0	151	100.0

On comparing the two classes (soldiers and recruits) it is seen that the numbers found to have organic valvular disease of the heart out of the total "heart cases" are practically the same in each, although it does not follow that the incidence of organic valvular disease amongst soldiers is the same as amongst recruits.

According to a return supplied to the Statutory Committee appointed under the Naval and Military War Pensions Act, 1915, giving the number of disabled soldiers and sailors discharged from the beginning of the war up to May 31st, 1916, there were 2,503 cases of heart disease out of 33,919 total cases discharged—approximately 7.4 per cent. discharged for heart disease alone. The numbers

with organic valvular disease found amongst the soldiers under note, who were all put forward with a view to discharge from the army, represent nearly 7 per cent.—almost identical with the percentage found in the report mentioned above. If cases of myocardial disease and organic valvular disease be taken together the proportion reaches 10 per cent.

The corresponding percentages in the case of recruits are 3.0 and 4.8 respectively, indicating a lessened degree of heart disease amongst recruits. Considering the types of cardiac affection encountered in the two classes, it is seen that the proportion having organic valvular disease is the same in each.

In a similar manner, considering myocardial affection, it is found that 15.6 per cent. in soldiers and 21.8 per cent. in recruits come in this group.

In Group 3, comprising what have been termed "strained hearts," 26.6 per cent. were found in soldier cases and 15.2 per cent. in recruit cases.

From observation and examination it has been essayed as far as possible to subdivide these cases into those which were considered to be permanently strained and those only temporarily strained, the chief factors aiding in this connexion being the age of the patient, duration and kind of symptoms, and general development.

The proportions found were as follows:

TABLE II.—*"Strained" Hearts.*

	Soldiers.		Recruits.	
	No.	Percentage of Total Heart Cases.	No.	Percentage of Total Heart Cases.
Permanently strained hearts...	28	12.8	19	12 5
Temporarily strained hearts ...	30	13.8	4	2.7

It is interesting to find that, whilst the proportion of permanently strained hearts would appear to be the same in both cases, temporarily strained hearts occur five times as frequently amongst soldier cases as amongst recruit cases. This result is what one might expect, considering that soldiers are more subject to sudden and very severe strain, enforcing rest with ensuing probable recovery, whilst in civilian life strain is not usually so great, but is spread over a longer period and has permanent effects.

In Group 4 (cardiac neurosis), 14.7 per cent. are found in the case of soldiers and 17.9 per cent. in the case of recruits. An endeavour was made to establish an underlying cause for the cardiac neurosis, with the following result:

TABLE III.—*Causes of Cardiac Neurosis.*

Causes of Cardiac Neurosis.	Soldiers.	Recruits.
(a) Enlarged thyroid	6	10
(b) Tobacco heart	4	4
(c) Drug taking	*Nil*	3
(d) Underlying cause doubtful ...	22	10
Total	32	27

Whilst 6 per cent. of the cases come under Group 5 in recruits, only 2.7 per cent. are found in the soldier cases.

CONCLUSIONS.

In conclusion, it appears to me that classification of the various kinds of cardiac affection into groups similar to those which have been described, and provided it is carried out carefully and systematically, should prove of material value in several ways—for example: (*a*) In helping to form a decision as to what kind of treatment, if any, should be adopted in a particular case; (*b*) in forming an opinion as to what category of military utility any particular man should be classified.

THE medical practitioners of Boston, Massachusetts, have, in view of the high cost of living, agreed to double their consultation fees and to raise the fee for night calls.

HYPOCHLOROUS SOLUTION ELECTRICALLY PRODUCED FROM HYPERTONIC SALINE AS A DISINFECTANT FOR SEPTIC WOUNDS,

AND FOR THE THROAT IN DIPHTHERIA, SCARLET FEVER, ETC.

BY

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AND

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ASSISTANT M.O.H. ST. HELENS.

IN 1911–12 one of us (F. C. L.), following the work done by other observers, carried out a number of experiments on the purification of water by the passage of an electric current after the introduction into the water of varying proportions of salt. He used an oblong watertight box in which were a series of graphite plates arranged in parallel.

Later this plan was used in the earlier experiments in the electrical treatment of milk, and in a report presented to the Health Committee of the City of Liverpool by another of us (J. M. B.) on August 16th, 1914, a photo-diagram of the electro-chemical cell used was given, and it was stated that though this electro-chemical sterilization gave a large measure of success with bacteria-containing fluids it was not suitable for milk. In view of the work recently recorded by Dakin, in the application of this well-established electrolytic process for the purposes of disinfection of hospital ships,[1] it is interesting to quote from the report above referred to that the apparatus used by Lewis

consisted of a series of circular intercommunicating graphite-walled, watertight cells, through which the contaminated fluid passed.

. . . The electricity was continuously applied by means of brass terminals screwed on to each graphite plate. This apparatus was used in a variety of ways; for example, all the plates were coupled in series or alternate plates were coupled in parallel with each other. The principle upon which the apparatus works is that when an electric current of suitable strength is passed through even a weak solution of salt, part of the salt is decomposed, as also is part of the water. As a result chemical reaction occurs and a body of high disinfecting value is produced. . . . Experiments with this type of apparatus showed that bacteria of all kinds could be rapidly and effectively destroyed.

These experiments, confirming previous work by various observers, showed that a fluid of high bactericidal properties could be produced by the electrolysis of salt water, and it was evident that the main chemical agents produced were hypochlorous acid and sodium hypochlorite.

Later a simpler apparatus, on the same principle, was erected in our laboratory in Liverpool for the disinfection of culture tubes, slides, etc.

A description of this apparatus was published by F. C. Lewis,[2] and in this paper the importance of the electrodes being a neutral material such as carbon was emphasized, as was also the simplicity and cheapness of the apparatus.

Since this paper was published much work has been done on the disinfectant action of the hypochlorites by Lorrain Smith, Dakin, and others, and an apparatus, almost identical in structure with the apparatus used by Lewis in his early experimental work, has been recommended for use in hospital ships—ordinary sea-water being substituted for the solution of common salt used by him. The results obtained by the use of this electrolyzed sea-water have confirmed the results of the previous work on the subject and of the experience gained in this laboratory after two years' use of the simple apparatus which Lewis described.

In his preliminary work Lewis used varying proportions up to 20 per cent. solution of common salt. When it was decided to try this disinfectant for the cleansing of wounds, the salt content of the original solution was reduced to 3 per cent. in the hope of obtaining a disinfectant action of the hypochlorous acid and the lymph-flow stimulation of hypertonic saline so strongly advocated by Sir Almroth Wright. The results obtained with the wounds were very

satisfactory, but in our earlier experiments the advantages over eusol and other antiseptics of this class did not appear of sufficient importance to justify us pressing forward this side of the work. More recently, however, some of our colleagues who have used our solution, particularly in very septic cases, where other antiseptics—even the ordinarily used hypochlorites—have failed, have got extremely good results. Thus, a case of very septic eczema of the foot, which had resisted various forms of treatment for months, cleared up completely in a few days. Captain Douglas-Crawford, F.R.C.S., has kindly given us the following details of a case under his charge:

CASE I.

Private T. B. had 3 in. of his left humerus removed in France and the ends wired about the middle of August, 1915. He was admitted into Highfield Military Hospital in December, 1915, the wound suppurating. It was practically healed by February 29th, 1916, and the wire was removed, but there was no attempt at union. On May 3rd, the wound having again healed, Captain Douglas-Crawford attempted to plate. The opening up had apparently freed again putrefactive bacteria which had been lying latent in the wound, and in two days there was a "stinking discharge," but no rise of temperature. The condition improved, but there was no attempt at union of the bone, and on August 26th, 1916, the plate was removed. Again there was a recurrence of the offensive odour, and on August 31st a swab from the wound showed an enormous number of putrefactive and other bacteria. From September 2nd the electrically prepared hypochlorite was used daily. The bacterial content became rapidly reduced, the smell disappeared, and on October 2nd the patient was discharged, the wound being firmly healed and the fracture so united that he could use the whole arm without any fixed apparatus.

Captain Douglas-Crawford adds, "Certainly, the electrically prepared solution in this and in the other cases here seems to be infinitely superior to the ordinary hypochlorous solution."

The difficulty of getting rid of the meningococcus from the nasopharynx, emphasized in the report of the Special Advisory Committee on the bacteriological studies of cerebro-spinal fever during the epidemic of 1915, suggested the advisability of carrying out some experiments on throat disinfection with this hypochlorous solution. Though we have examined a considerable number of contacts from cases of cerebro-spinal meningitis, we have not found any suitable case for treatment, and therefore we now record our results in cases of diphtheria in the hope that those who come across meningococcus carriers may give the method a thorough trial. The method of treatment adopted was to spray the nasal passages and the throat with the solution every three hours, and, in cases in which the tonsils were badly affected, to get well into the crypts with a swab soaked in the solution. Our first trials were carried out on five selected cases, and the improvement was so manifest that it was decided to carry out the work on a more extended scale, and through the courtesy of a colleague we divided all the cases notified as diphtheria and admitted to his hospital during the months of April, May, and June, into two groups, A and B. Some of the worst cases were put into Group A for treatment with the hypochlorous solution. The cases in Group A numbered 52; of these, 24 were positive to bacteriological examination, and 28 were negative. All these were treated with the hypochlorous solution. In Group B there were 65 cases, and 35 of these were bacteriologically positive. These were taken as control cases and treated with the ordinary sprays, paints, etc.

TABLE I.—*Cases notified as Diphtheria treated with and without Hypochlorous Solution.*

	Group A. Hypochlorous Saline.	Group B. Control.
Total number of cases	52	65
Average time in hospital	15.3 days	18.8 days
Cases bacteriologically positive ...	24	35
*Deaths among these	2	5
Average time in hospital	16.4 days	23.2 days
Cases bacteriologically negative ...	28	30
Deaths among these	0	0
Average time in hospital	14.3 days	13.8 days

* These figures do not include deaths which occurred within forty-eight hours of admission.

From this table it is seen—

1. That if we take the cases that were proved positive by bacteriological examination on admission, those treated with the hypochlorous solution were in hospital 29.4 per cent. less time than those not so treated, and if we take the total of notified cases the time reduction amounted to 19.2 per cent.
2. That the ratio of fatal cases in those treated with the hypochlorous solution to the number of cases under examination was less.

We fully realize that the number of cases under observation is small, that the lessened death-rate may have no relation to the treatment, and that it would be unwise to express too definite an opinion on the superiority of the treatment from these cases alone, but we claim that had no special selection been made the period of detention in hospital for Group A cases would have been reduced still further. Even the reduction shown is very important from the financial point of view.

That there has been an actual reduction of the period of time in hospital is supported by a comparison with the statistics for the previous three months (January to March) when the ordinary sprays, etc., were used. These facts are shown in Table II.

TABLE II.

	January to March.	April to June.	
		Treated with Hypochlorous Solution.	Not Treated with Hypochlorous Solution.
Cases bacteriologically positive	63	24	35
Average time in hospital...	26.9 days	16.4 days	23.2 days
Cases bacteriologically negative	44	28	30
Average time in hospital...	14 days	14.3 days	13.8 days

This table shows that the average time in hospital for negative cases is practically the same in both periods, whether treated with hypochlorous solution or not, and, further, that in the positive cases the treated ones show a fall of from seven to ten days as compared with the untreated in April to June and January to March.

In regard to the severity of the cases in the two periods, we have considered this carefully, and from the clinical history, the number of deaths and the number of tracheotomy cases there seems to be a very close similarity in the two selected periods. This is shown in Table III.

TABLE III.—*Comparison of Severity of Cases.*

	January to March.	April to June.
Total cases in hospital	122	130
Total deaths	15	13
Deaths within two or three days ...	6	6
Tracheotomy cases	9	9

Our claim that the hypochlorous treatment is more effective than that ordinarily applied is also supported by the following cases:

CASE II.

Lieutenant C. was under the charge of Dr. Daley, M.O.H. for Bootle, to whom we are indebted for permission to publish the case, for six weeks. Various methods of treatment were tried, formalin and iodine sprays, nasal douching, and throat spraying with pyocyanase every two hours, but throughout the nasopharyngeal catarrh was constant and *B. diphtheriae* were found at every swabbing.

On the suggestion of one of us he was treated with the hypochlorous solution for three days. Twenty-four hours later a swab was taken and no *B. diphtheriae* were found. The treatment was resumed for twenty-four hours and a second swab taken the following day. *B. diphtheriae* were present, but the growth was scanty. A third and a fourth swab were taken at intervals of two days, and still an occasional colony of *B. diphtheriae* was found. The fifth swab, however, was negative; the sixth was also negative, and the man was soon after discharged completely free.

Thus a case which had lasted six weeks without any apparent improvement cleared up completely in less than a fortnight. The delay in final clearing was probably due to the organisms in the crypts of the tonsils not being attacked by the solution at first.

CASE III.

This case is somewhat similar to that of Lieutenant C., and for permission to publish it we are indebted to Dr. Macmaster, M.O.H. for Crewe. The history is as follows: "On June 29th, the infant son of this man (a soldier) was notified as suffering from diphtheria, and as the father was home on a couple of days' leave I swabbed his throat as a precautionary measure before his returning to duty. This throat swab was found to be positive. As the man had been coming home at frequent intervals I concluded, from the type of organism present, he had infected his baby as he was evidently a chronic carrier. There is a history of repeated sore throats in his case, and his tonsils had been hypertrophied some time with large crypts. The man's general condition was very good indeed."

We received a swab from this case on July 21st, from which we isolated a true pathogenic *B. diphtheriae*. The pathogenicity was tested on a guinea-pig. Before this swab was taken the man had had "very active treatment with a dilute solution of iodine each day under his own doctor." After the recognition of *B. diphtheriae* at this time—that is, July 29th to 30th—the electrolytic hypochlorite solution was used night and morning for two days; after an interval of a day without treatment, a swab was taken. The swab showed a few *B. diphtheriae*, but there was undoubtedly a distinct lessening in numbers. Treatment was continued, and the swab taken on August 9th showed no *B. diphtheriae*.

On August 14th, however, a few *B. diphtheriae* were found, and this result was thought to be due to some of the organisms lying deeply in the crypts and hence escaping treatment. It was suggested that the crypts should be specially swabbed with the hypochlorite. Again, on August 21st and 28th, the swabs from the throat were both negative, and the man was discharged from hospital. The case is summarized as follows:

A very copious growth of *B. diphtheriae* was isolated on July 21st, and proved to be pathogenic. Iodine treatment was continued from July 20th to 26th, and on July 29th to 30th hypochlorite treatment was commenced. On August 3rd a swab showed a few *B. diphtheriae* and copious growth of staphylococci. On August 9th no *B. diphtheriae* were found, but a few colonies of staphylococci. On August 14th a few isolated *B. diphtheriae* were found amongst a growth of staphylococci. On August 21st, and again on August 28th, no *B. diphtheriae* were found, and there was a very feeble growth of staphylococci.

In this case the enlargements of the tonsils and the consequent depth of the crypts prevented a more rapid recovery, as there is evidence from this case, as well as from Case II, that the exposed bacteria are destroyed easily; we would suggest that it is necessary, in cases of infection of the tonsils, that swabbing of the large crypts should be combined with spraying.

CASE IV.

Another carrier case was dealt with, but as this man had had no previous treatment we can only record the results of treatment with the hypochlorous solution.

The father of a child admitted to hospital was found to be a carrier. *B. diphtheriae* were found in his throat on June 24th and they were still present on July 3rd. Hypochlorous treatment was started. Swabs were taken on July 5th and *B. diphtheriae* were absent. Again, on July 6th, the swabs were negative, though no treatment had meanwhile been carried out.

CASE V.

A child of 8 years had a chronic discharge from the ear. The history was indefinite, but the mother said the discharge had been going on always since birth. The organism isolated was *B. diphtheriae* type, though probably not a true *B. diphtheriae*. Examinations were made on May 10th, 15th, 25th, and 31st, and on June 6th, and the organism was found on every occasion. The hypochlorous treatment was commenced on June 12th, and swabs taken remained positive till June 15th. The condition showed great improvement; the discharge ceased and swabs taken on June 19th, 21st, and 29th in the ear were negative.

The solution has been used in cases of septic throat and in scarlet fever with very encouraging results. Dr. Daley writes:

We are using the hypochlorous acid solution at the Corporation Hospital for all diphtheria cases, for septic scarlatiniform throats, and for rhinorrhoea and otorrhoea. Since we began to use it we have not had a single case in which the Klebs-Loeffler bacilli have persisted beyond ten to fourteen days after admission. It used to be quite common for a case otherwise quite recovered to have to stay in hospital solely because the diphtheria bacilli persisted in the throat. That never occurs now, the nose and throat being always clear before the general condition has sufficiently recovered to enable a patient to be discharged.

The scarlet fever throats also appear to have improved clinically quicker than formerly, but accurate observation on this point, owing to the absence of a bacteriological test, is not easy.

In using any antiseptic in the mouth, it is always important to determine whether any harmful effect is produced, especially on the teeth; we have tested the action of the hypochlorous solution on both temporary and permanent teeth, and on the various fillings which are used by dentists. No injurious effect could be made out on the teeth, or on any of the fillings except amalgam, on which distinct chemical action was seen after exposure in the solution for some hours, but when the amalgam was sprayed and then washed, or even simply bathed for a few seconds in saliva, no more effect was seen than is apparent from the ordinary mouth wash.*

Disinfectant Action of the Fluid.

TABLE IV.—*Comparison of the Relative Bactericidal Effect of the Hypochlorous Solution and other Common Fluids used in Throat Disinfection.*

	Time of Exposure in Minutes.									
	1	2	3	4	5	6	7	8	9	10
Hypochlorous solution ...	−	−	−	−	−	−	−	−	−	−
Iodine solution	+	+	+	+	+	+	+	+	+	+
Formalin and glycerine solution	+	+	+	+	+	+	+	+	+	+
1 per cent. carbolic acid ...	+	+	+	+	+	+	+	+	+	+
5 per cent. carbolic acid ...	−	−	−	−	−	−	−	−	−	−

The method used in this experiment consisted in adding five drops of a twenty-four hour broth culture of *Staphylococcus aureus* to twenty-five drops of the fluid under observation. Subcultures to test the effect of the fluid were made in broth and on agar tubes and the results noted after incubation for forty-eight hours.

Further Experiments.

1. Ten c.cm. of the hypochlorous solution rendered opaque with *B. coli* was sterile within fifteen minutes.
2. Ten c.cm. of the hypochlorous solution rendered opaque with a mixture of sporing organisms was sterile within one hour, and showed only a feeble growth in thirty minutes.
3. A putrid emulsion was taken, and varying volumes of hypochlorous solution added as follows:

Volume of Emulsion.	Volume of Hypochlorous Solution.	Result in Thirty Minutes.
1	1	Growth.
1	2	Growth.
1	4	Growth.
1	8	Growth.
1	10	Feeble growth.
1	20	No growth.
1	50	No growth.
1	100	No growth.

The Apparatus.

For ordinary use an open glass vessel, such as a museum jar, is three-quarters filled with 3 per cent. sodium chloride. Carbon (graphite) electrodes are inserted and connected to the source of electric power, the current previously passing through a resistance. In the original publication[2] stress was laid upon the fact that the current was that used in ordinary microscope illumination, and that this was sufficient to produce a powerful disinfectant, and further, that the current need not be used continuously, but only when required for the use of the microscope. This method is undoubtedly valuable for ordinary laboratory purposes, and there is no reason why a part of the ordinary lighting current of a hospital should not be used in the same way, and the disinfectant produced only during the hours when electric light is in use; the cost of production would thus be practically *nil*. The voltage required to drive the current through the saline is very low, and consequently the effect on the candle power of the illumination is practicably negligible.

On the other hand, if really large quantities of the fluid are required continuously, a low voltage dynamo of high electrical output could be usefully employed. Such an apparatus is very economical, and would of course be used independently of the lighting circuit.

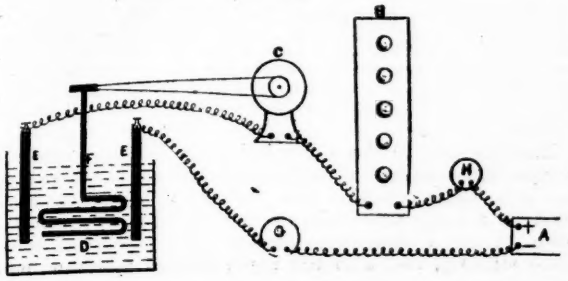
* We are indebted to Mr. W. H. Gilmour, L.D.S., Director of Dental Education in Liverpool, not only for supplying us with the teeth and with the fillings, but also for the examination of these after exposure.

A device for stirring the fluid during the progress of manufacture is advisable, but not absolutely necessary if only small quantities are required.

In all our work we have used the ordinary lighting current of the laboratory, and during the process of electrolysis the fluid has been stirred by a revolving glass rod, bent into a series of right angles, driven by a 2-volt motor.

We have tried the plan of placing the negative electrode below the positive electrode, and allowing the electricity to operate through a cylinder of saline, but this method is in our experience not so acceptable in practice as that in which the stirrer is used.

Diagram illustrating the Apparatus.



Description of Diagram.

A, The main electrical supply. B, The lighting circuit or lamp. C, Motor for driving the stirrer F. D, Vessel containing saline. E, Electrodes. G, Ammeter. H, Switch.

A siphon for drawing off the finished fluid and a reservoir of saline may be used in order to facilitate a continuous supply.

Notes.—1. If the amount of current required to be used in the cell be greater than that necessary to drive the small motor C, the latter may be conveniently driven by an accumulator. 2. If the lighting current is used, as apart from the use of a few lamps, or in any case if a high power installation is used, double pole switches and cut-outs, etc., would be necessary. Considerations such as these, however, properly belong to the domain of the electrical engineer, and it would be superfluous for us to attempt to enter into details.

We find the following measurements are suitable for use:

Volume of fluid	2,000 c.cm. (3½ pints)
Height of vessel...	6 inches
Diameter of vessel	7 inches
Electricity	1 ampère
Voltage across cell	4½ volts
Revolutions of stirrer	60 to 80 per minute
Time	1½ hours

From this it follows that the amount of fluid manufactured in a given time varies directly with the amount of current used. By using the fluid in the form of a spray for throat, nose, and nasopharynx, the actual quantity used is small.*

It has been suggested that ammonium hypochlorite is a more powerful disinfectant than sodium hypochlorite, but we have not confirmed this statement, at least as regards the electrolysis of a solution of ammonium chloride.

TABLE V.—*Comparison of Ammonium and Sodium Hypochlorite. Test Organism: Staphylococcus aureus.*

Electrolysis of NaCl.	Time of Exposure in Minutes.						
	2½	5	7½	10	12½	15	17½
Ordinary strength	–	–	–	–	–	–	–
Diluted 1 in 5	–	–	–	–	–	–	–
Diluted 1 in 10	–	–	–	–	–	–	–
Electrolysis of NH₄Cl.							
Ordinary strength	–	–	–	–	–	–	–
Diluted 1 in 5	+	+	+	+	–	–	–
Diluted 1 in 10	+	+	+	+	+	+	–

– No growth. + Definite growth.

Electrolyzed solutions of ammonium chloride are not as acceptable as the sodium hypochlorite owing to the more pleasant taste of the latter, and the above experiment would show that the ammonium hypochlorite solution is less advantageous from the bactericidal point of view. Some experiments have been made with magnesium sulphate and sodium sulphate added to the finished sodium hypochlorite solution, but these experiments are not sufficiently complete for publication. It is intended, however, to extend this work, and arrangements have been made accordingly.

* Since the above was written 47 further throat cases have been under treatment. Ten of these were very severe and died within a few days of admission. Of the remaining 37, 18 were bacteriologically positive to *B. diphtheriæ*, and remained in hospital for an average of 17·9 days, and 19 were negative bacteriologically, and remained in hospital for an average of 15.2 days. These later results bear out our previous work (Table II).

CONCLUSIONS.

1. That the bactericidal action of this hypochlorous solution is high, and that it has the advantage over the ordinarily used antiseptics in that it does not coagulate albuminous material, and thus form a protecting coagulum.
2. It has a slight stimulant action but is non-irritating.
3. The lymph flow in the wound is encouraged by the hypertonic solution which is used for the production of the hypochlorite.
4. Surface bacteria on septic foci seem to be destroyed almost immediately, and the stimulant action on the lymph flow tends to wash to the surface the more deeply situated organisms. (This lymph increase is very evident in the wounds treated with this solution.)
5. The solution can be produced very simply, and at comparatively small cost.
6. Though the solution will keep, if the bottles are full and properly stoppered, for a considerable period, yet it is an advantage to use freshly prepared material, and the apparatus such as we have described can be installed at any hospital or institution, and a supply of the solution produced at a very small cost.
7. Where large quantities are required, a small dynamo can be used. The cost of such an installation, which can be arranged by any electrician, would be comparatively small, and the cost of production of the disinfectant very little. An installation in each hospital would be a great advantage so that a sufficient supply of the freshly prepared disinfectant in its most efficient condition would be always available.

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AUTO-DISINFECTION OF WOUNDS BY THE USE OF ETHER SOLUTION.

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THE treatment of infected wounds by aiming at a process of sterilization either by the use of disinfectants or vaccines is not, in general, regarded as yielding satisfactory results. An alternative line of treatment can be pursued based on the known bactericidal property of fresh young tissues, as was demonstrated long ago by Maffucci[1] in the case of the embryonal tissues of chicken and the tubercle bacillus.

Our aim has been to create, by "quickening" the process of regeneration, such embryonic tissues in wounds. It occurs at once to a person trained in biology to apply to the treatment of wounds facts brought to light in experimental parthenogenesis, a wonderful chapter of biology in which chemical and mechanical stimuli are employed to replace those of the spermatozoon.

With this end in view, ether was selected on account of its marked stimulating power. Its action as a general anaesthetic we have interpreted as being due to its stimulating power on the cell metabolism giving rise to catabolic products, thereby inducing sleep, and therefore similar in effect to fatigue. This view is supported by the well-known fact that, if ether or chloroform is added to blood serum, the amount of free dextrose present is considerably increased.

It was thought probable that ether in undiluted strength would follow the general law of the cellular poisons, exercising a deleterious effect on cells and microbes alike. In order to verify this point, the "ether damp" was employed in a few cases. This method consisted in

moistening a single layer of gauze spread over the wound with ether twice daily and covering it immediately with a pad of thick cotton-wool. The result was disappointing, as, save for an irritative action on the surrounding skin, the wounds showed no improvement in three days. The cause of the failure was probably twofold. First, as stated above, the ether in concentration follows the law of the disinfectants, and secondly, its cooling action may be inhibitory to the activity of the cells.

It was next proved that, following again the general law of the action of disinfectants, a weak dilution of ether would suffice for the exercise of a stimulating action, and a series of cases were treated by irrigation with a 2 per cent. solution. It is important to add that 2 per cent. ether solution has not proved inimical to the growth of microbes. On the contrary, tubes of microbes exposed to ether of this strength showed an abundant growth as compared with the growth in the control tubes.

The method of irrigation was chosen for its mechanical action in removing necrotic tissues or "corrupted lymph." The presence of this tissue in a wound markedly retards the process of healing, because it serves as a rich pabulum for the growth of the microbes, as already shown by Sir Almroth Wright.[2] This view is supported by the following experiments:

Pieces of normal intestine were placed in test tubes containing broth and incubated for six months under anaërobic conditions to allow the anaërobic putrefactive microbes to thrive. The pieces of intestine were found to be quite intact and an abundant growth of the putrefactive microbes was observed.

Similar experiments were made, but with the addition of pieces of sterilized intestine. After a short time the sterilized pieces of intestine had disappeared.

The difference in the fate of the intestine in the two experiments is explained by the fact that the microbes have the power to dissolve the coagulated albumin, but not the native one, and it is evident that the necrotic tissues in the wounds are in a similar state to the coagulated albumin in the experiment. This experiment also demonstrates the power of fresh tissues to resist the attack of the most powerful putrefactive organisms.

The following illustrative cases were irrigated with a 2 per cent. ether solution in lukewarm tap-water, using about two litres once daily. The apparatus used was similar to Lane's apparatus for subcutaneous infusion.

CASES I AND II.

Two large superficial wounds of the left flank, with good drainage and moderate sepsis, which had been treated for a week with antiseptics, were irrigated with the ether solution. In twelve hours the appearance of the wound was in striking contrast to that seen before the use of ether irrigation. The granulations were at least twice their previous size, and bled freely. In three days the wound was filled in with granulations, and pus was not visible. Coincident with the quickening of the regenerative process in the wound the epithelium also showed marked activity, and rapidly covered over the bare area. The treatment was completed in twelve days.

CASE III.

A septic wound of the chest wall and the pectoral muscles contained many small pieces of metal. These were removed and the cavity laid open. After irrigation for four days granulations had filled the wound and new epithelium had spread inwards for half an inch. The wound was healed in fourteen days.

CASE IV.

A deep wound of the lower third of the thigh, exposing the muscles and tendon on the outer side of the wound, the tendon being quite bare. Treatment with eusol had been carried on for one week without any change, the tendon being still bare. After ether irrigation for four days granulations had covered over the tendon and no pus was visible. This deep wound was completely healed in twenty days.

CASE V.

A case of tuberculosis of the kidney. The kidney was removed. The wound completely broke down, the patient's general condition being very poor. Later, a further operation was performed from the front for removal of the ureter, which was also affected. This wound also broke down in two places, superficially. In spite of treatment with antiseptics the very deep loin wound showed no sign of granulation. Granulations were distinctly visible after ether irrigation for a week, and the wound has steadily filled up during six weeks' irrigation. Meanwhile, the small superficial sinuses in front, treated with iodine and used as a control, have as yet shown no sign of granulation formation. An important feature to be noted in this case is the absence of bleeding from the granulation tissue, whereas in other wounds rapidly reacting to ether, bleeding has always been very noticeable.

CASE VI.

A large abscess cavity of the thigh, from which 10 oz. of pus was evacuated, was drained, and ether irrigation commenced two days after evacuation. After the first irrigation the discharge ceased to be purulent, the walls oozing blood freely. On the third day there was scarcely any discharge, and the cavity was freely and rapidly filling with granulation tissue.

CASE VII.

A gaping septic wound at the shoulder with compound comminuted fracture of the humerus. Ether irrigation daily for seven days resulted in rapid closing in of the edges of the wound, and the stimulating effect on the epithelium was well seen, but the amount of pus was not sensibly reduced. An operation was performed for removal of sequestra, which were well separated after three weeks. This, followed by renewal of irrigation, resulted in complete healing of a very "difficult" wound in five weeks.

CASE VIII.

A case of compound fracture of tibia and fibula, with marked sepsis and poor drainage, was treated with ether irrigation, and in six days granulation tissue was abundant in a large cavity involving at least one-third of the leg. The large size of the firm granulations was well demonstrated in this wound. Pus was not visible after nine days' irrigation, and the surface oozed blood freely.

The response to the ether irrigation in these cases in comparison with irrigation by disinfectants was extremely marked. The effect is best seen in a favourable case, such as a large superficial wound, the very early appearance of large firm granulations and bleeding being quite striking, and also the rapid inward spread of new epithelium.

In order to ascertain whether the observed reaction was due to the mechanical factor or not—as is also the case in parthenogenesis, where Bataillon was able to set up division of the unfecundated eggs of the frog by pricking the poles thereof—we made use of the ether bath. The wound was immersed in a 2 per cent. mixture as used in irrigation for twenty minutes once a day. The following cases illustrate the result of this method.

CASE IX.

Compound fracture of the upper third of the left forearm, the wound being covered with a firmly adherent slough. The bath was used for twenty minutes once daily. On the second day the slough had separated, and the exposed new surface showed free, firm, and bleeding granulation tissue. In one week no pus was visible.

CASE X.

A very heavily infected wound of the right forearm, not involving the bones but containing a piece of metal and some cloth, which were removed. In two days the granulations were obvious, and the thick foul pus present before operation and treatment had practically disappeared, and the wound was healed in twelve days.

CASE XI.

A superficial wound of the left forearm, exposing a large bare area of muscle and covered with pus, was found free from pus and covered with very large firm and oozing granulations on the third day, and after nine days the epithelium had grown inwards and reduced it to one-third its original size. It was healed in fourteen days.

The immersion method, in our opinion, is even more efficient than irrigation. We are therefore obliged to exclude the theory that the simple mechanical action of the irrigation may set up regeneration of the tissues, and it is evident that the stimulus applied is the cause of the rapid growth of granulation tissue and the forced healing of the wounds.

In order to acquaint ourselves with the process of healing in these wounds, sections of the granulations grown during the treatment were made. From them we learnt that regeneration of the tissues takes place normally. It is, however, to be noted that the number of polymorphonuclear leucocytes present was very small, but lymphocytes were present in fair numbers. The most striking feature was the marked production of fibroblasts. The new blood vessels were very richly distributed, and quickly formed in the deep layers. The upper layers showed fibroblasts which were in the stage of forming vessels. On staining the sections by Gram's method and fuchsin we failed to see microbes of any kind. The total absence of fibrin (Weigert-Gram method) was another striking feature in the sections.

The above observations prove, in our opinion, that the leucocyte defensive property is not to be taken into consideration, the facts which emerge clearly from a study of the sections being the great vascularization of the regenerated tissues and the marked abundance of the contained blood corpuscles, together with the presence of

an enormous quantity of fresh young fibroblasts and the entire absence of fibrin.

We are conscious of the fact that, in common with all observations on the human subject, these notes lack a wide scientific basis, being without the necessary control. None the less, in the cases studied two constant phenomena were observed—namely, the very early and striking appearance of large firm granulations (often in six hours), and the early bleeding of the surface of the wound.

This latter point led us to introduce a slight modification in cases now under treatment, which has served to shed some light on the part played by ether in the healing of the wounds. The wounds are firmly swabbed when dressed, especially those with cavities or deficient drainage. This procedure, while removing the pus, is undoubtedly instrumental in hastening healing by encouraging further oozing of blood from the granulation tissue.

In this connexion it is interesting to note that in Case v, where the healing process was comparatively slow, the granulation tissue did not bleed readily, and is in striking contrast to the other freely oozing and rapidly healing wounds cited. The induction of bleeding by scarification of the wound surface in this case immediately resulted in a quicker and firmer growth of new tissue. Indeed, without undervaluing the bactericidal power of young, fresh tissue, we are forced to think also of the bactericidal action of the blood in these cases, the function of the ether being to stimulate the growth of the tissues without clotting the fibrin, and providing thus the newly-formed tissue with free and constant lavage with blood. This we consider a logical conclusion from the foregoing observations, despite its conflict with current opinion in this matter.

Moreover, the ether method has given definite curative results where other methods had been disappointing—as, for example, in Cases IV and V. It has proved also its ability to quicken the healing of wounds to a striking degree, and the treatment of a case is completed in about half the time taken before its introduction into our practice.

It can, therefore, be fairly deduced that the discharge of patients from hospital is materially accelerated by the use of the ether method, on account of its comparatively rapid healing power.

REFERENCES.

[1] *Rivista critica di Clinica Medica*, 1900, No. 12. [2] *Lancet*, October 30th, 1915.

THE RELATION OF THE TYPE OF COCCUS TO THE TYPE OF DISEASE IN MENINGOCOCCAL MENINGITIS.

BY

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FOR some time evidence has been accumulating that in the species of organisms known as the meningococcus there are a number of races which can be differentiated by their immunological reactions.

By the method of "absorption of agglutinins" Gordon, working in the Central Cerebro-spinal Laboratory, has been able to differentiate the meningococcus into four strains based upon their immunological characters. Using the four strains isolated, he has prepared four immune serums from young rabbits, which can be used for the differential diagnosis of the type of meningococcus by macroscopic agglutination methods. For over a year we have been using such serums, kindly supplied to us by Colonel Gordon, for the differentiation and diagnosis of meningococci isolated from cases of cerebro-spinal fever or "carriers."

It occurred to us that there might be some difference in the virulence or pathogenic reactions of the four types of the coccus in so far as the resulting disease is concerned, and the present paper is an endeavour to correlate the type of coccus to the type of disease.

Our observations are based upon a study of twenty-three cases of cerebro-spinal fever. In all except four the organism was cultivated from the cerebro-spinal fluid; in three of these the coccus was seen on direct examination of the fluid, although it failed to grow on culture; in each, however, a culture of the meningococcus was obtained from nasopharyngeal swabs and the type of the organism so determined; in the fourth, an abortive case, the organism was obtained from the nasopharynx, but the cerebro-spinal fluid was clear and no organisms were found on direct examination or culture.

Type I Coccus.

This type of meningococcus was found in eight cases. Without exception all were extremely severe, six proving fatal. Of these, one was fulminating, and the patient died within thirty-six hours of the onset of illness. Two were of a progressively purulent nature—that is, the meningeal exudate became daily thicker and more purulent, and both died on the ninth day of the disease. Two were acute types, and died, apparently of toxaemia, on the fourth and eighth day respectively. The last fatal case was a man, aged 60, who did not come under treatment until the third day. Although severely ill, he progressed favourably as regards the meningitis, when, on the eighth day, pneumonia of the right lower lobe unfortunately supervened. Notwithstanding the fact that by this time no meningococci could be found in the slightly turbid cerebro-spinal fluid, the lung condition apparently permitted an exacerbation of the meningitis, for organisms reappeared in the fluid on the eleventh day. The patient died on the fourteenth day of the disease, although the pneumonic condition had practically disappeared.

Of the two cases which recovered, both were severe, but came under treatment on the second day of illness. One of these ran a prolonged course of thirty-eight days before final recovery; the other was acutely ill, but ran a course of ten days only.

All the cases in this group were admitted to hospital in a delirious or unconscious condition. In five the onset was sudden and abrupt; two had had a "cold" and "sore throat" for about a week, but the actual onset of meningeal symptoms was sudden. In the remaining case the onset was more gradual.

Type II Coccus.

Eight cases were found infected with this type of meningococcus. All recovered. None were fulminating, three were severe, four moderate, and one abortive. Of the severe cases one ran a course of eighty days, another of twenty-eight days, and a third of twenty-four days. The moderate cases had all a course of seven to ten days only. The abortive case was that of a man who was found to be carrying this type of meningococcus in his nasopharynx on April 28th, 1916. On May 4th severe headache set in, pain in the back of the neck developed, and he vomited. The patient had pyrexia and slight cervical rigidity, but there was only a tendency to Kernig's sign. Lumbar puncture gave a clear fluid under slight pressure. Within four days of the onset the temperature had returned to normal, and the patient was fairly well.

Type III Coccus.

Six cases due to this type occurred; they fall into two distinct divisions. The first includes two occurring early in 1916, the second division four appearing at the end of the year.

The two in the first division were both very severe and proved fatal after prolonged courses, in one case thirty-one days and in the other fifty-four days; towards the end of the course in each case gradually diminishing quantities of fluid were obtained on lumbar puncture and occasionally none. Coincident with this, signs of hydrocephalus appeared—progressive emaciation, continuous headache, tremulousness, and mental torpor.

The four in the second division were of moderate severity only, all excepting one recovering. The fatal case did not come under our care until the fourth day of the disease, the nature of the case not being recognized till then. The symptoms at first were subacute, as in the other three, and it was only when he became unconscious

that the true condition was suspected and he was transferred to us for treatment. He died on the seventh day of the disease. The remaining three, coming under treatment on the second day, ran comparatively short courses of seven to fourteen days.

Type IV Coccus.

No case in which this type of coccus was obtained was met with. One case occurring early in the year, before an agglutinating serum for Type IV coccus was obtained, was found to be due to a meningococcus inagglutinable by any of the first three type serums. The patient recovered after a moderate course of thirty-two days, in spite of pneumonia complicating the disease.

In all the above cases allowance must be made for the influence of treatment. Early treatment is of paramount importance. In the only two cases of Type I which recovered, treatment was in each case commenced on the second day. The only recent case of Type III which proved fatal was not treated until the fourth day of the disease. The treatment adopted in the majority of the cases consisted of repeated lumbar puncture, with daily intrathecal administration of serum in the earlier stages, and continued vaccine, as described elsewhere.[1]

Lister Institute serum was employed throughout.

REFERENCE.
[1] BRITISH MEDICAL JOURNAL, November 18th, 1916.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

PREVENTION OF CEREBRO-SPINAL FEVER.

IN view of the prevalence of cerebro-spinal fever on transports from overseas, and also in large military camps, it may be of practical interest to explain the measures which have been successfully employed to check the disease amongst New Zealand reinforcements.

For a period of fifteen months prior to October 1st, 1916, the disease was prevalent in military camps in New Zealand, and cases frequently occurred on the transports, some of a rapid and fulminating type. As the measures adopted in New Zealand failed to control the disease, I had a consultation at the Central Cerebro-spinal Fever Laboratory, London, with Colonels Gordon and Reece, and it was decided to communicate by cablegram the following measures, which were adopted, and are still in force.

All troops before embarkation have the nasopharynx swabbed and examined bacteriologically, only negative cases being allowed to proceed. The rejects and contacts are treated by a steam apparatus similar to that described in a recent article in the BRITISH MEDICAL JOURNAL by Colonel Gordon and Captain Flack. By this method a disinfectant solution is sprayed into the air of a room of 700 cub. ft. capacity, the steam atomizing from a vessel containing 1 per cent. solution of zinc sulphate, of which 1 litre suffices for twenty minutes. Eight carriers are treated for five minutes in the prone position, inhaling the misty air freely through the nose; this temporarily destroys the meningococcus in the nasopharynx. The inhalations are repeated daily for three, four, or five days until the results of the swab examinations are negative. Inhalation rooms are fitted up at the military camps, and also on all transports proceeding to England.

This method has now been employed for six months with most gratifying results. During that period not a single case of cerebro-spinal fever has developed on a transport, and I am notified that the disease is now under control in New Zealand. The success, no doubt, depends upon the thoroughness of the measures adopted, but it seems sufficiently encouraging to justify a wider application of the method, both on transports and in large camps.

W. H. PARKES, Colonel,
D.D.M.S., N.Z. Expeditionary Force.

London, W.C.

CEREBRO-SPINAL FEVER.

THE cases admitted, including 14 military, to the Alexandra Cerebro-spinal Fever Hospital, Wigmore, Kent, from July, 1915, to December, 1916, numbered 51 (14 female and 37 male). Of these, 3 were moribund, and died within a few hours. Excluding these, the deaths numbered 14, giving a death-rate of 28 per cent.

	Cases.	Death-rate.
1–5 years	8 ...	25 per cent.
5–10 ,, ...	6 ...	50 ,,
10–15 ,, ...	9 ...	12 ,,
15–20 ,, ...	8 ...	37 ,,
20–25 ,, ...	5 ...	*Nil.*
Over 25 years	15 ...	35 per cent.

The oldest patient was 64 years old.

The average day of disease on admission was the sixth.

Twenty-two cases showed no rash; 29 showed one or more types of rashes, as follows:

Herpes...	10
Petechia	15
Purpura	6
Erythema	3
Macules	1

Pressure erythema was always present. The number of lumbar punctures made was 234, and 189 doses of Mulford or Lister Institute serum were given intraspinally. During the last three months a small dose of serum was also given subcutaneously on admission. A serum rash developed in 77 per cent. of cases which survived the tenth day. The average date of its appearance was on the tenth day after the first dose of serum.

The following complications were seen:

Many cases of bronchitis and bronchopneumonia.
1 case of temporary insanity.
6 cases of arthritis.
4 cases of chronic hydrocephalus.
1 case of severe neuritis.
1 case of complete paralysis of the eye.
1 case of parotitis.
1 psoas abscess.

Polyuria was a very common early symptom.

RICHARD C. C. CLAY, M.R.C.S., L.R.C.P.

Fovant, near Salisbury.

SUBCUTANEOUS EMPHYSEMA DURING LABOUR.

THE following case, similar to that recorded by Dr. Murray (January 6th, p. 14), and the only one I have so far seen, occurred at the Mission of Hope Maternity Hospital in May, 1915.

B. F., a primipara, aged 22, was examined after admission on April 21st. She was a normal healthy woman, showing no signs of disease of heart or lungs. She had good pelvic measurements. There was some oedema of the ankles, but her urine was normal. Labour commenced on May 6th, and lasted seventeen hours, of which the first stage occupied fourteen. About an hour before the baby (male) was born she felt something go "pop," and swelling of the right eyelids was noticed.

I saw her after the birth; she complained of slight substernal uneasiness, but otherwise felt quite well. The typical crackling was felt all over the face except the forehead and chin, and over the neck and anterior chest wall down to the level of the breasts, over the whole of the back on the right side as low as the margins of the ribs, and on the left side down to the angle of the scapula. On percussion no superficial cardiac dullness was present, and the note at the right apex was "boxy" in character. The breath sounds were quite normal. The baby weighed 9½ lb.

From the physical signs it appeared that the seat of rupture was in the neighbourhood of the right apex with the pleura adherent. The temperature fell from 100.4° F. to normal within twelve hours, and the subcutaneous crackling had disappeared in five days. It is not unusual to get a short rise of temperature after a moderately stiff confinement, as this was, though the emphysema may have been a contributory cause in this instance.

London, S.W. GEORGE MILNE, M.D., D.P.H.

THE executive of the German Medical Association has adopted a resolution demanding that after the war students prematurely qualified to practise medicine should be given an opportunity to continue their studies. A three months' course should be given at large centres and universities where adequate facilities for teaching exist. The teachers should be paid, but the instruction should be free to the pupils, as it is to the interest of the public that these imperfectly qualified practitioners should take advantage of this opportunity to supplement their studies. It is suggested that scholarships should be offered, and that those attending the course should not be allowed to practise medicine during its continuance.

Reports of Societies.

THE CHANGES IN THE CENTRAL NERVOUS SYSTEM IN HYPOTHYROIDISM.

AT a meeting of the Pathological Section of the Royal Society of Medicine on February 13th, when the President, Dr. F. W. ANDREWES, F.R.S., was in the chair, Dr. F. W. MOTT, F.R.S., recalled that he had published two communications in the *Proceedings* of the Psychiatric Section of the society on the changes in the central nervous system in hypothyroidism. The nervous symptoms in myxoedema pointed to a condition of exhaustion of nervous energy, which could be remedied by the administration of thyroid gland; consequently *a priori*, upon the assumption that the basophil substance of the nerve cell was a source of nervous energy, we should expect to find what he had now actually found to exist in seven cases, namely, a marked chromatolysis, which in sections of the brain and spinal cord was revealed by the partial or complete disappearance of the Nissl granules throughout the central nervous system. A very advanced case of hypothyroidism had been admitted to Claybury Asylum since the former publications; the patient showed well marked signs of myxoedema and very marked mental symptoms. Dr. Mott briefly related the summary of the clinical facts and pathological findings in the six previously recorded cases. He called attention to a valuable paper by Dr. Kojima on the ductless glands in 110 cases of insanity. This work had been done in Dr. Mott's laboratory, and published in the *Proceedings* of the Psychiatric Section of the Royal Society of Medicine (vol. viii). Dr. Mott then stated his conclusions regarding a correlation of hypothyroidism and changes in the central nervous system. There was, he said, a universal chromatolytic change in the cells of the central nervous system, sparing no system or group of systems of neurones entirely. The changes had been especially noted in the smaller cells of the autonomic nuclei—for example, the vagus and glosso-pharyngeal. The cells of the olivary body showed much less change and the Purkinje cells of the cerebellum less chromatolysis than the large motor cells of the medulla oblongata, spinal cord, and Betz cells of the cortex, and there was no increase of neuroglia. All the asylum cases, especially four of the five, showed marked chromatolysis of the cortical cells. The case that showed the least degree of mental confusion and other signs of insanity exhibited the least change in the cortical cells. He exhibited lantern slides showing very marked changes, and the mental symptoms in this case were most pronounced. Unfortunately, the notes did not permit correlation of the changes in the bulb, in these asylum cases, with the symptoms indicative of affection of the autonomic nuclei, as was possible in the hospital cases. But he had come to the conclusion that there was a type of insanity in women about the climacteric, in which a manic-depressive condition, associated with mental confusion, hallucinations, delusions—mainly of persecution—loss of memory of recent events, slowness of thought and utterance, and terminating in dementia, might arise as a result of a particular form of hypothyroidism. This hypothyroidism was characterized (1) by an atrophy of the glandular structure of the thyroid, interstitial fibrous hyperplasia, and abundant infiltration of the same with lymphocytes; a condition of chronic inflammation arising from a toxic condition, probably local in its source, as Kojima had shown; the adjacent parathyroids did not exhibit this change. (2) By an increase in weight of the pituitary gland, as a rule, but not always; nevertheless there was, as was shown by Boyce and Beadles long ago, and later by Herring in experimental hypothyroidism, an increase of the *pars intermedia*. Herring had also shown that the cells of this structure invaded the *pars nervosa*, and this had occurred in the case under consideration. All five cases of hypothyroidism in which the pituitary was examined showed an excess of colloid in the *pars intermedia*. As a control, it might be stated that the characteristic perinuclear chromatolysis of the nerve cells found in these cases was not discovered in two cases of simple atrophy of the thyroid gland. Examination of the thyroid gland in these two cases showed still normal colloid vesicles, and although there was an increase of fibrous tissue there was no lymphocytic infiltration indicative of a local toxic inflammation, neither was there any increase of the *pars intermedia* or colloid material observed by Dr. Kojima. It had always to be considered, of course, how far the atrophy of a gland, and failure of its function, might act in upsetting the biochemical balance existing between the secretions of all the ductless glands and the sexual glands. In the five asylum cases in which the suprarenal glands were examined a deficiency of lipoid in the cortex was observed, but it would be unscientific to correlate this condition certainly with the thyroid atrophy, for the patients had died usually of some acute infective disease, and Elliot had shown that the lipoid was diminished in cases of death from infective disease. Still it was suggestive. Dr. Kojima, in his exhaustive examination of all the ductless glands in three cases, came to the conclusion that he could exclude the probability that changes in any other ductless glands than the thyroid could be responsible for the nervous and mental symptoms, and the histological changes in the central nervous system. It was suggestive, however, that the ovaries were affected in three cases. "It may be remarked that these were the cases in which there was not merely a glandular atrophy, but there was also a marked chronic inflammatory interstitial change." Dr. Mott concluded by stating that in the case now recorded the ovaries were extraordinarily large, with an enormous number of corpora albicantia, but healthy Graafian follicles were present. In all these cases the blood and cerebro-spinal fluid gave a negative Wassermann reaction. The following are the notes of the particular case referred to in the present communication.

A CASE OF MYXOEDEMA.

A woman, aged 38. Admitted to Claybury Asylum on March 23rd, 1916, with no history of previous illness or treatment. The medical certificate stated: "She is continually shouting and screaming out that she is falling."

Physical Examination.

Bruises were found on forearms and legs. The muscular system showed paresis. The abdomen was distended and the lungs full of râles. There was incontinence of urine and continuous metrorrhagia. The knee-jerks were absent, but the patient's condition did not permit of examination of the reflexes, as she was in the last stage of exhaustion when admitted.

Abstract of Notes made on Admission.

The patient was suffering from confusional insanity with myxoedema. She was at times very noisy, due to hallucinations of sight and hearing. She rambled inconsequently of things she imagined she saw and heard. She thought she was falling through space and was inclined to be noisy. She took nourishment—milk and brandy and beef-tea—but her breathing became laboured and her face and hands blue. Her pulse was barely perceptible and temperature subnormal. The general weakness and restlessness developed with the onset of broncho-pneumonia. She died from heart failure about thirty-eight hours after admission.

Post-mortem Examination.

Examination of the brain showed considerable wasting of the convolutions, with enlarged sulci, especially in the central region; the cortex was thin and the striation poor; the fourth ventricle was not granular and the membranes stripped without erosion. The weight of the brain was 1,115 grams, the right hemisphere weighing 480 grams and the left 475 grams.

The dura mater was slightly thickened, and there was excess of fluid in the subdural space. The pia arachnoid was slightly opaque but not adherent. There was slight atheroma of the vessels.

The thyroid was very small and atrophic.

The bronchial glands were enlarged and black, and the lungs congested and filled with muco-purulent material, and showed signs of commencing bronchopneumonia; there was adhesion of the posterior border and base of the left pleura.

The right lung weighed 655 grams and the left 610 grams.

The heart was well shaped, with a marked deposit of fat; the right ventricle was enlarged, as also the auricle, and there was slight atheroma of the aorta and great vessels.

The liver weighed 1,470 grams, and was enlarged, with increase of fibrous tissue, and opacity of the capsule in some places. The bile was dark, and the spleen weighed 145 grams.

The kidneys each weighed 160 grams; they stripped easily, were slightly atrophic, with a fatty deposit everywhere. The adrenals were small, but of normal appearance on section.

The uterus was long and in good condition, but the ovaries were unusually large and abnormally long, as long as the tubes; the right ovary weighed 7 grams, and was 3 in. long.; the left ovary weighed 5.5 grams, and was 2½ in. long.

The patient weighed 68 kilos; her hair was very thin, and her general condition fatty. The muscular system was covered with a fatty deposit, and her teeth were bad.

The cause of death was heart failure.

Remarks.

The practitioner under whose care the patient had been, told me that he had considered the case was one of general paralysis of the insane. She was demented, and her speech was affected. Seeing that he had had experience as a medical officer at an asylum, he was surprised when I told him that the brain presented no macroscopic or microscopic signs of this disease, and that the case was one of myxoedema with confusional insanity.

[Another communication by Major Mott on the vascular changes of the brain in gas poisoning will be published in a future issue.]

BISMUTH AND IODOFORM PASTE IN GUNSHOT WOUNDS.

AT a meeting of the Association of Registered Medical Women on February 13th, when Dr. HELEN BOYLE was in the chair, Dr. LOUISA GARRETT ANDERSON read a report on gunshot wounds, more especially of the head, treated at the Military Hospital, Endell Street. The total admissions to the hospital during the latter part of 1915 numbered 2,633; of these, 18 had compound fracture of the skull due to gunshot wounds, 18 were trephined, and all but 2 recovered. During 1916, among 4,297 admissions, 14 had compound fracture of the skull, 12 were trephined, and one ended fatally. The prognosis depended partly upon the position of the injury; thus, of the above 32 cases, 6 in the frontal region recovered, 4 in the temporo-sphenoidal recovered, 16 in the Rolandic area recovered, while of 6 in the occipital region 3 proved fatal. Complications included 7 cases of hernia cerebri, of which 6 recovered, 2 of abscess, of which one recovered, one of meningitis, which was fatal. Dr. Anderson reported many cases in detail, and showed slides of the *x*-ray appearances. A boy, aged 19, had his right arm shattered, necessitating amputation at the shoulder; there was also a scalp wound. In a few days the temperature was 102°, and he complained of headache and vomited; an abscess an inch in depth was discovered in the frontal lobe. This was treated with bismuth and iodoform paste, and the patient made an excellent recovery. Several cases of cerebral hernia also yielded rapidly to treatment by the same paste. In a very badly comminuted fracture of the ulna near the elbow, the wound was thoroughly exposed under an anaesthetic, and bismuth and iodoform paste was scrubbed well in. In six weeks union had taken place, the wound had healed and the movement of the arm was normal. Before the introduction of bismuth and iodoform paste this case would probably have been under treatment for months. The first dressing was left for six days, and later dressings for a longer period. In another case the head of the humerus had been removed in France, leaving a very septic wound and a cavity which admitted three fingers. This was dressed at six to nine days' intervals with bismuth and iodoform paste, and in six weeks had healed completely, leaving neither pain nor swelling. A bad fracture of the wrist healed in a month by the use of bismuth and iodoform paste, movement being perfect. A fracture of the neck of the femur connected with a foul gangrenous wound was similarly treated with bismuth and iodoform paste and put at rest in a Boulogne box; the patient was now walking with the aid of a thin stick. In a fracture of both leg bones, pouring out pus and with a high temperature, the wound was thoroughly cleansed and treated with bismuth and iodoform paste; the edges of the septic wound were stitched up and held; the wound was dressed every seven to ten days, and healed completely. The use of bismuth and iodoform paste was originally suggested by Mr. Rutherford Morison, and the advantages over the old method of treatment were enormous. In the early days of the war these septic wounds were dressed two to three times daily, causing great pain, and requiring much assistance and much time, while healing was much delayed. In using bismuth and iodoform paste the gauze covering was changed every seven to ten days, and the time required for dressing was about three minutes, while healing was infinitely more rapid.

PROFESSOR WERNER has been appointed director of the Institut für experimentelle Krebsforschung established at Heidelberg by the late Professor Czerny.

Reviews.

THE TREATMENT OF INFECTED WOUNDS:

THE CARREL-DAKIN METHOD.

DR. A. CARREL, who when the war broke out was working at the Rockefeller Institute for Medical Research, New York, returned to his native country at once, and was shortly after placed in charge of a French temporary military hospital at Compiègne, where the Rockefeller Foundation had established laboratories in which Dr. Dakin worked for some time in association with M. Daufresne and Madame Carrel. As a result of their joint labours a method of treating wounds has been devised which in suitable circumstances yields very excellent results. Its principles and their application have been reported from time to time in our columns, but surgeons will welcome the small book [1] of some hundred and eighty pages, published in the useful Collection Horizon of Masson et Cie., by Dr. A. CARREL and his colleague, Dr. G. DEHELLY.

The volume is well illustrated by diagrams and contains an explicit statement of the principles and results of the treatment. The essential features of the technique, as applied to cases within the first twenty-four hours after the infliction of the wound—that is, at a period before the onset of the characteristic phenomena of inflammation—are excision of the walls of the wound, irrigation of the wounded area by antiseptic solution until microscopic examination of the secretions shows that the number of organisms has been reduced practically to the vanishing point, and finally, when the sterilization has been attained, closure of the wound by suture. Apart from the technique of irrigation devised by Carrel and the bacteriological control, the novelty of the method lies in the *ensemble* rather than in the individual procedures; thus excision of wounds was advocated by Colonel Gray (BRITISH MEDICAL JOURNAL, August 28th, 1915, p. 317), and the use of neutralized hypochlorite solutions was described in these pages by Lorrain Smith, Drennan, Rettie, and Campbell, and independently by Dakin (BRITISH MEDICAL JOURNAL, July 24th, 1915, p. 129, and August 28th, 1915, p. 318). The treatment organized by Carrel has yielded results which have commanded wide attention, and the book under notice will be of great value in enabling those who have not had the opportunity of personally visiting Hôpital temporaire No. 21 and the laboratories at Compiègne to judge for themselves how these results have been attained.

Special emphasis is throughout laid upon the details, and therefore it behoves the reader to concentrate his attention on these; according to the authors even an experienced surgeon requires several weeks' apprenticeship to the method in order to become familiar with its working (p. 177). In the first place, mechanical cleansing of the wound by excision is carried out—this is omitted as dangerous if the phenomena of inflammation have already set in; then the tissues are subjected to a course of chemical cleansing. For the latter purpose hypochlorite solution is employed of a fixed strength (0.5 per cent. of sodium hypochlorite), which in practice must not vary except within narrow limits. This solution, as devised originally by Dakin, was prepared by the addition of sodium carbonate and boric acid to bleaching powder, but Carrel prefers the modified solution of Daufresne from which boric acid is omitted. It is to be noted that the use of sodium hypochlorite as a safe antiseptic for contact with the living tissues depends on the proper adjustment of the reaction; alkaline solutions, such as those of Javelle or Labarraque, are harmful. Great ingenuity has been shown in providing for the uniform distribution of the antiseptic to the entire surface of the wound by means of Carrel's tubes (one form of these was early described in the JOURNAL, August 28th, 1915, p. 332). As most commonly employed, the tubes are of narrow bore rubber closed at one end; near the closed end are a number of fine lateral perforations. According to the size of the wound several of these tubes are disposed within the cavity, care being taken that no gauze intervenes between the tubes

[1] *Le traitement des plaies infectées.* Par A. Carrel et G. Dehelly. Collection Horizon: Précis de Médecine et de Chirurgie de Guerre. Paris: Masson et Cie. 1917. (Cr. 8vo, pp. 177; 78 figures. Fr. 4.)

and the tissues, and also that the tubes are not so closely applied to the walls as to block the perforations (Fig. 1). Then the tubes are connected by a T-piece with a single tube attached to a reservoir holding 1 litre, which is raised several feet above the level of the wound. The tubes are led through the outer dressing into the wound, and are kept in place by safety pins in the manner shown in Fig. 2, where two sets of tubes are being employed. The reservoir is filled with hypochlorite solution, and the supply of this to the wound is secured by opening for a few seconds every two hours the pinch-cock attached to the main tube. Thus a spray of fluid from the fine perforations in the rubber tubes plays over the whole surface of the wound. An important point is the absence of a drainage opening at the most dependent part of the wound; in fact, the ideal arrangement is attained when the wound is cup-shaped; when it is on the inferior surface of a limb the aperture is partially plugged with gauze so as to prevent the fluid from escaping freely. The liquid is absorbed in the intervals between the irrigations, so that there is practically no wetting of the skin or dressings. In short, the arrangement aims at frequent periodic flushing of the whole infected surfaces with a practically non-irritating fluid, which possesses a moderate degree of bactericidal power, and also dissolves dead tissues. In this connexion it is important to note that vessels in the base of the wound should not be ligatured with silk which is dissolved by the hypochlorite. Very great importance is attached to the renewal of the fluid at short intervals, since, according to the authors, if a pad soaked in Dakin's solution is applied to the surface of an infected wound, the result obtained is almost *nil*, for the dilution due to the secretions of the wound and the combination of the hypochlorite with the protein material rapidly abolishes the antiseptic action. It is essential that this consideration should never be lost sight of by those who seek to adopt the method. Where a single tube suffices for flushing the wound continuous irrigation, drop by drop, may be practised by means of the simple apparatus known as the *Comptes-gouttes de Gentile* (Fig. 3) interposed in the course of the indiarubber tube near its junction with the reservoir. If treatment is begun in the presuppurative stage a wound of the soft parts can be sterilized in from three to ten days, and a compound fracture in ten to fifteen days or more (p. 111); a valuable feature is that sequestra do not become centres of infection, and so may be left *in situ* as a support for bony new formation. When suppuration has already set in the time required for sterilization is somewhat greater, and infected sequestra, of course, must be removed. Great stress is laid on the bacteriological control, since a wound clinically healthy may yet harbour a sufficient number of organisms to prevent healing by first intention when the surfaces are brought together; but when, in the case of a wound treated from the outset by this method, microscopic examination shows practical sterility of the surface for two or three days, closure may then be safely practised. When there has been suppuration it is advisable to wait longer—up to eight days. Thus the principle followed is to wait till the tissues have formed a granulating layer under the continuous influence of a non-irritating and detergent antiseptic, which in itself does not hamper the processes of repair, and then, after organisms have been practically eliminated, to bring the surfaces into apposition. As opposed to primary suture immediately after excision of a recent wound, Carrel's method seeks to avoid the accidental inclusion of virulent organisms in the unprotected tissues, where they may be capable of causing most serious effects. Such is a brief outline of the main thesis; reference must, however, be made to the original for many subsidiary but important points, such as the use of Dakin's chloramine (see Dakin, Cohen, Kenyon, and Daufresne, BRITISH MEDICAL JOURNAL, January 29th, 1916, p. 160) in the form of an antiseptic paste, and of pastes for filling in gaps in bones.

FIG. 1.—Thigh. Tubes in contact with the interior surfaces, kept apart by gauze at the apertures.

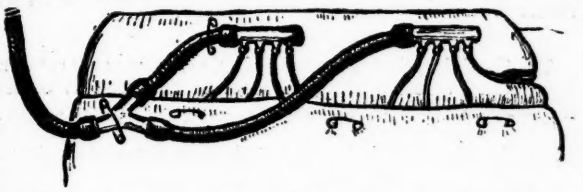


FIG. 2.—Arrangement of two distributing tubes, each with four branches.

FIG. 3. Compte-gouttes.

As to the results which may be achieved by this method when carried out with strict attention to detail there can be little doubt, and the success is a tribute to the value of sympathetic co-operation between the clinician and the laboratory worker. The question arises, however, as to whether the method is applicable when the sudden influx of enormous numbers of wounded makes the heaviest demands on the medical personnel. The authors seem inclined to regard their procedures as feasible even under these circumstances, although others are less sanguine. It must be remembered also that no compromise is possible between this method and the ordinary modes of drainage; thus, if the treatment is interrupted, patients are reduced practically to the same state as if their wounds had not been touched at all; this is a most serious matter when the wounded must be transported for long distances. Such considerations are, of course, of the greatest importance in determining the general applicability of the method to the treatment of our own wounded under present conditions; but they do not detract from the great service rendered by Carrel, Dakin, and their co-workers in demonstrating the possibilities in the direction of prevention and treatment of suppuration in infected wounds when the surgeon is provided with ample facilities and free to pursue a method of election.

[The figures here given are after Carrel and Dehelly.]

NOTES ON BOOKS.

THE first edition of *Applied Immunology*[2] by Drs. THOMAS and IVY, of Philadelphia, was reviewed in the BRITISH MEDICAL JOURNAL of June 24th, 1916, page 887. We have recently received a copy of the second edition, which has been brought up to date by a number of additions and some new matter. Describing the exhibition of salvarsan, the authors say that the French, English, American, and Canadian preparations of this specific show "no noteworthy difference from the original German drug."

Lessons in Russian,[3] by Mr. KARRACHY-SMITH, is a graduated Russian course for those who wish to learn the language of our great ally. The first part gives a brief account of the Russian language, and then plunges into the alphabet. Here the author takes the unusual course of describing, in order, the first, fourteenth, seventeenth, second, fifth, twelfth, fourth, eighteenth, and other letters; we cannot think that this disarrangement facilitates the learning of so complex and confusing an alphabet as the Russian. When he does give the letters in their alphabetical order (page 35) the author does not give their names or their equivalents in English, a further obstacle in the student's way. The second course of this series deals with the regular verb, its conjugations, and aspects.

An advertisement, description, and year book of the West African colony of Sierra Leone[4] has been written by Mr. H. O. NEWLAND, in order that persons who wish to emigrate may be tempted to think of that colony. The text is interesting and well illustrated; at the end a postscript gives some useful practical notes on planting cacao and ground-nuts. The book would benefit by the addition of a map.

[2] *Applied Immunology: The Practical Application of Sera and Bacterins Prophylactically, Diagnostically, and Therapeutically.* By B. A Thomas, A.M., M.D., and R. H. Ivy, M.D., D.D.S. Second edition, revised. (Med. 8vo, pp. 377; 68 figures. 16s. net.)

[3] *Lessons in Russian.* By M. B. Karrachy-Smith. London: Sampson Low, Marston and Co. 1915. (Cr. 8vo, pp. 47 and 72. 1s. 6d. and 2s. net.)

[4] *Sierra Leone: Its People, Products, and Secret Societies.* By H. O. Newland, F.R.Hist.S., F.I.D. London: J. Bale, Sons, and Danielsson, Ltd. 1916. (Demy 8vo, pp. 265; 19 plates. 7s. 6d. net.)

The Weird Adventures of Professor Delapine of the Sorbonne[5] is a novel written with the purpose of carrying conviction to those who do not believe in the genuineness of certain spiritualistic phenomena—thought reading, table turning, and the like. The author has endeavoured "to clothe the real facts with a halo of romance," he tells us in his preface. This transparent vesture does nothing to veil the bare improbability of his characters, their conversations, their actions, and their dealings with the supernatural.

In his book entitled *New Concepts in Diagnosis and Treatment*,[6] Dr. ABRAMS gives an account of his electronic theory in the interpretation and treatment of disease. It deals with such subjects as neurodynamic fields, sexual polarity, biodynamgnosis, gyrography, telepathy, the sphygmobiometer and biosphygmomanometry, reflex-phonometry, the measurement of energy and rates of vibration in ohms, and determinations of the secretory activity of the pituitary body by concussing the seventh cervical spine for a few seconds and then ascertaining by the aid of the biodynamometer the potentiality of the energy discharge from the seventh dorsal spine. One may seriously question whether such a volume, in this country, will find many readers.

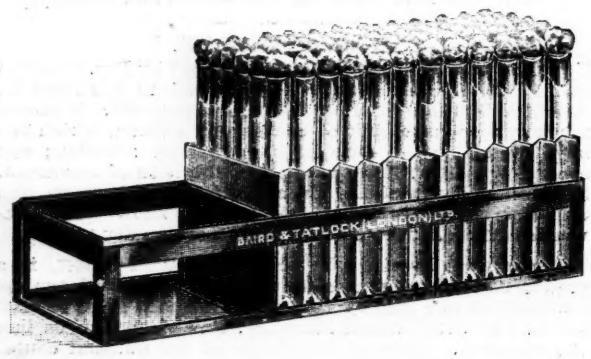
[5] *The Weird Adventures of Professor Delapine of the Sorbonne.* By G. L. Johnson, M.A., M.D., B.S., F.R.C.S. London: G. Routledge and Sons, Ltd. South Africa: Central News Agency, Ltd. New York: E. P. Dutton and Co. 1916. (Cr. 8vo, pp. 356. 6s.)

[6] *New Concepts in Diagnosis and Treatment.* By A. Abrams, A.M., LL.D., M.D. University of Heidelberg, F.R.M.S. San Francisco: Philopolis Press. 1916. (Roy. 8vo, pp. 352; 80 figures.)

MEDICAL AND SURGICAL APPLIANCES.

Test-tube Containers and Racks.

MR. T. H. C. BENIANS, F.R.C.S. (Pathological Department, Prince of Wales's Hospital, Tottenham, N.), writes: The illustration shows a light metal rack of which a convenient size is 14 in. in length, 5 in. in breadth, and 2½ in. in depth, divided by two transverse bars. The test tubes are contained in square-bottomed thick paper envelopes about 3¾ in. in depth, each of which can carry six or seven tubes standing upright side by side. The envelopes



are packed upright in the rack. In this way fifteen sets of tubes in the one rack can be handled with the greatest convenience, and stored in the incubator in the minimum amount of space. The apparatus is particularly useful when numerous cases are under bacteriological investigation, especially when several tubes of culture media—sugars, for instance—are required for each case, as in coli-typhoid work. It is made by Messrs. Baird and Tatlock of Hatton Garden.

THE POORER LABOURING CLASSES AND THE VOLUNTARY RATION.

WE are indebted to Professor Noël Paton for the following comparison, worked out by Miss Margaret J. H. Ferguson, of the voluntary ration with the ordinary diet of the poorer labouring classes in Glasgow. It is directed to two points: First, how far these classes can get their necessary supply of energy on the basal allowance of flour, meat, and sugar in the voluntary ration of the Food Controller; and, secondly, whether the adoption of the ration enables them to get their energy at a greater or lesser cost than in their usual diet.

I.

Taking the analyses used by the Food Committee of the Royal Society, the yield of energy of the ration suggested by the Food Controller is as follows:

3 lb. of flour	708	calories
2½ lb. of meat	423	,,
¾ lb. of sugar	195	,,
Total	1,326	,,

This leaves 1,294 calories, or nearly 50 per cent. of the required energy, to be obtained from other foods.

The other foods most abundantly used are—(1) potatoes, (2) butter and margarine, (3) milk, and (4) cereals other than wheat—oatmeal, barley, maize, rice, etc.

Taking the amount available per unit of the population as the same as in pre-war times, as stated in Appendix IA of the Food Report, these would yield the following per "person" per day:

Potatoes	244	calories
Butter and margarine	211	,,
Milk	195	,,
Other cereals	119	,,
	769	,,

The remaining 525 calories must be obtained from other foods, but a study of the Appendix fails to show from what foods they can be got.

Fruit, the next most important item, would at best yield 65 calories, lard 49, cheese 35, fish 32, poultry, eggs, etc., 21, and legumes 25 calories. Including all of these, although certain of these are too expensive to be purchased to any extent by the labouring classes, the diet still falls short by nearly 300 of the minimum requirement of 2,620 calories.

II.

To the labouring classes living on a wage averaging from 20s. to 30s. weekly, the cost of the food is of first importance.

Table showing the Relative Cost of the Ration and of the Average Quantity of Flour, Meat, and Sugar consumed weekly per Person per Week by Thirty-six Labouring Class Families in Glasgow in 1915–16 at Prices current in Glasgow in January, 1917.

The incomes varied from 20s. to 30s. a week, and the energy intake was 3,280 calories per man per day, or 2,525 calories per person.

	Cost.	Yield of Energy.
Voluntary Ration:	s. d.	Calories.
3 lb. of flour at 3d. per lb.	0 9	4953
2½ lb. meat at 12d. per lb.	2 6	2962.5
¾ lb. sugar at 5¼ per lb.	0 4	1367
Totals	3 7	9282.5
Labouring Class Families, 1915–16:		
4.4 lb. of flour at 3d. per lb.	13 2d.	7264
1.34 lb. meat at 12d. per lb.	16.08d.	1608
1.41 lb. sugar at 5.25d. per lb.	7.4d.	2570
Totals	3s. 0¾d.	11,442

Thus for an average family of five the adoption of the ration would raise the cost of food 2s. 7¼d. a week, while 10,800 calories less energy would be secured—309 per person per day. This is a reduction of the energy bought per penny from 309 to 216 calories—a very serious consideration for such people.

THE number of medical students in the five universities of Switzerland in the summer semester of 1916 was 1,850. They were distributed as follows: Bâle, 334, of whom 154 were foreigners; Berne, 352, of whom 153 were foreigners; Geneva, 477, of whom 341 were foreigners; Lausanne, 231, of whom 105 were foreigners; Zürich, 456, of whom 187 were foreigners. In the total number there were 259 women, Bâle having 15, Berne 31, Geneva 105, Lausanne 28, and Zürich 80. Geneva had the largest number (99) of foreign women students, and Bâle the lowest (1).

British Medical Journal.

SATURDAY, FEBRUARY 24TH, 1917.

HEALTH OF WOMEN MUNITION WORKERS.

WE have given from time to time an account of the decisions and recommendations of the Ministry of Munitions, founded upon the reports of the Health of Munition Workers Committee, with regard to the health, among other matters, of women workers. Mr. Lloyd George became Minister of Munitions in May, 1915, and the Committee was appointed very shortly afterwards. It was able to report over a year ago that many large works had a medical officer on the staff, whose services were available for serious cases before removal to hospital, and who was responsible for the supervision of the surgery, which was in charge of a trained nurse or a competent person with knowledge of ambulance work. The evidence of the economic and industrial value of the proper organization of a medical service within the factory was convincing, as was also the need for providing everywhere the welfare supervision already provided in many factories. Under the head of welfare supervision was included attention to housing and to means of transit; to general conditions affecting the health of workers, and the causes of individual ill health or overfatigue; to facilities for rest, recreation, and suitable meals in suitable surroundings. Towards the achievement of the last-named object the Committee contributed two special memorandums on the construction and management of industrial canteens.

Much of the work of the Committee is concerned with general conditions affecting the health of men and women workers alike, though not in all respects to the same extent. It issued its first memorandum dealing specifically with women in February, 1916; it found that too long hours of work, the lack of sympathetic oversight, the inability to obtain good wholesome food, and the difficulties of travelling, then stood in the way of securing or maintaining for an extended period the high maximum output of which women are undoubtedly capable. But it recognized that a public spirit and a devotion were happily manifest capable of overcoming difficulties and solving problems, and that these qualities were accompanied by an understanding of the claims of women and of their children, and of their vital importance to the State. This understanding is a reward for the sacrifice and energy of women now working steadfastly in the ranks of labour; how many they are we do not know, but the Minister of Munitions the other day gave some facts with regard to the increase in the number of shells of various kinds produced, as compared with the year ending June, 1916, which proves it to have been enormous, and in all this work women's labour plays a most important part.

It is not in this country only that the safeguarding of the health of women engaged in factories and of their children is exercising the attention of the Government. In France something has been done under the impulsion of the Ministry of Munitions by some employers, but from a report of a special committee now under the consideration of the Académie de Médecine it seems that much remains to be accomplished. The committee which was appointed to inquire into the measures that should be taken to safeguard the health of women workers in munition factories and their children has made a series of recommendations, of which the first two have reference to expectant mothers and the care of infants. It is recommended that the employment of a woman in a munition factory during the four weeks preceding her confinement should be absolutely forbidden by law, and that women who are pregnant or suckling should be given only light work which will not expose them to any hurtful or toxic influences, should be offered half-day shifts, and should not be allowed to work at night. Another recommendation is that there should be a doctor attached to the factory to advise women workers as to their health and to recommend change of occupation, with power to forbid a pregnant woman to work at all if continuance of work is likely to injure her own health or that of the infant she is carrying. In order to encourage women workers to suckle their infants the Committee recommends that suitable rooms should be provided, and that the mother should be compensated for the loss of working time due to this cause, and that suitable places (*garderies*) should be provided where children could be taken care of while their mothers were at work. It advises also that a woman with child or having a child at the breast who is compelled to give up work altogether, or to shorten her hours of work, should be compensated, and that funds for this purpose should be provided by an insurance scheme organized by the State.

Recent statistics published in the official journal of the Imperial German Department of Labour Statistics, while showing that the growth of female employment in that country since the outbreak of the war has not been so great as had been assumed from a consideration of certain trades, indicate that in those trades the increase has been very considerable. Estimates based on returns as to insurance seem to show that the number of women employed in Germany, not including farmers' wives and daughters, had increased from about 3,700,000 in July, 1914, to about 4,200,000 in July, 1916. In the metal trades the number had increased from 86,000 to 144,000. The number of women employed at Krupp's works would appear to have increased from 1,166 at the end of December, 1914, to 13,023 at the beginning of April, 1916. About 10,000 women were employed in the factories of the Rhenish provinces and Westphalia before the war, and over 42,000 in August, 1915; of the persons employed in the iron mines of the Ruhr, which before the war employed no women, 2 per cent. are now women. The Prussian Ministry of War requires employers to provide for the needs of workwomen willing to work in factories by increasing the number of institutions for the reception of children, by organizing half-day shifts, by opening, in conjunction with municipalities, special workshops for making certain articles needed by the armies, and by providing suitable lodgings for country women wishing to work in towns. The municipalities are required to provide workshops and apparatus to afford employment to women who are out of work. Recently a special central office, to deal with women's work, has been established in the Ministry of War, Berlin. A medical woman, Dr. Lueders, is in charge of the office, and it is proposed to establish branches and to work in conjunction with the national committee for women workers during the war, already in existence. This department will advise as to the aptitude of women for various kinds of work, and will supervise measures for the protection of their health, for the establishment of rest-rooms

and dormitories, for providing a proper working dress, for increasing means of transport, and for improving arrangements for feeding. It will also give attention to the health of the families of women doing war work by establishing homes and crèches and gardens for children. All this work is to be carried out in constant co-operation with the local authorities and under expert advice.

PHYSICAL EDUCATION OF ELEMENTARY SCHOOL CHILDREN.

THE Board of Education has issued new Medical Grant Regulations, dated February 10th, and has forwarded them to local education authorities with a circular letter dealing with grants in aid of the organization and supervision of the teaching of physical training in public elementary schools. Grants are already made, as is well known, towards the cost of systematic medical inspection for school children, but it was generally felt that inspection must be followed by efficient treatment. Local authorities were "encouraged" to face the necessary expenditure for treatment, and not a few have faced it. For so doing they have received the commendation of the central authorities, who, however, had hitherto turned a deaf ear to appeals that the State should share in an expenditure that was much more than local, and fell with great heaviness on large industrial districts. In face of the excellence of the work done through the medical treatment of school children, it was difficult to justify the inequality of the burden borne by different localities of the same city, a condition of things particularly well exemplified in London, and in the new regulations the Board of Education announces that it will make grants to the local authorities during each financial year in respect of the medical inspection and medical treatment of children attending public elementary schools and work ancillary to medical treatment. The grant will be made on the basis of work done in the previous year. If, in the Board's opinion, the provision be adequate, one-half the total cost will be met by the grant. Grants will be made also in respect of the medical treatment and care of children at day or residential open-air schools certified by the Board of Education under the Elementary Education (Defective and Epileptic Children) Act, 1899. The grant will be made only in respect of schools for children suffering from tuberculosis, debility, or pretuberculous conditions, who, by reason of their physical condition, are likely to derive special benefit from attendance at an open-air school. This provision puts open-air schools on the same footing, as regards State aid, as the schools for the blind, deaf, mentally defective, and epileptic children. Many of these children are essentially salvable if given some extra care and food. If the grants are justified on the ground of compassion and of necessary special education for the seriously maimed and defective, some of whom will take no effective place in the national life, they must be still better justified for those who will in all probability be enabled to rejoin the ranks of the healthy and happy members of the normal school.

The regulations and the circular letter deal also with the organization and provision of physical training in public elementary schools. This is a provision for the positive side of health—the making of the healthy child better and fitter physically and mentally for the work of school. In 1909 the Board issued a revised syllabus of physical exercises, and it considers that its general principles, and the types of exercises and methods of teaching recommended, have been amply justified. It is now desired to develop the system, and to extend the facilities for the special instruction of teachers. The Board is prepared to make grants for the employment of competent persons to organize and supervise the physical training of children in public elementary schools. The intention is that there should be a grouping of the schools. For small areas a single organizer will be sufficient; in the larger areas assistant organizers working under the direction of a chief will be required. The duties of the organizer will be the oversight of physical training in the schools, including not only formal exercises, but also dancing, organized games and play, and swimming. The organizer will not undertake teaching systematically, but will visit the schools to watch the teachers themselves conducting lessons, and give advice and make suggestions to individual teachers after observation of their work. Demonstration lessons will be arranged for the teachers. It is recommended that the work of the organizer should be closely associated with the School Medical Service, and that the school medical officer should have definite functions in respect of it. He should in particular exercise supervision over any remedial gymnastic treatment carried out by experts in connexion with the school clinic. Both he and the organizer of physical training should co-operate not only in regard to the training of children already suffering from definite physical defects, but also in regard to the prevention of avoidable defects by means of exercises correctly taught and applied.

The qualifications of the organizers are not defined, but it is said that a previous experience of elementary school conditions should be looked upon as one of the essential qualifications, at any rate in the case of a chief organizer. A sound knowledge of the "Swedish" system is said to be necessary, as well as personal experience in teaching children of all ages. As to the salaries of the organizers, it is stated that they should be adequate to attract and retain officers well qualified and suitable for their responsible position.

This new departure of the Board follows on lines which have already been traced out by some of the more energetic of the local education authorities. The reports of the value of the systematic cultivation in the schools of healthy exercises, play and games, and swimming, give grounds for the hope that the extension of this work will bring similar benefits to the rest of the school community. The games of the town school child but a few years ago were confined to marbles, knickers, leap-frog and tip-cat for the boys, with touch and skipping for the girls, all good enough in themselves, but lacking in that they did not foster the social instincts so well as such organized games as cricket and football, which were the common possession of the country lad and the public school boy. The change brought about in the last few years through the enthusiastic expenditure of time and energy by so many of the school teachers, has well earned this official approval.

LEGISLATION TO CONTROL VENEREAL DISEASE.

THE speech in which the Home Secretary explained the provisions of the bill to amend the law with respect to the punishment of sexual offences was so clear that the full significance of the proposals can be easily gathered from the report published at p. 273. It is a sort of omnibus measure, but the provisions which, apart from those raising the age of consent and imposing severer penalties on brothel keepers, are

of chief interest have reference to the infliction of penalties on a person who, knowing that he or she is suffering from venereal disease in communicable form, has or solicits sexual intercourse, and the prohibition of advertisements relating to venereal disease or the producing of miscarriage or abortion.

The clause as to communication is, as will be seen, widely drawn, makes no distinction between the sexes, and imposes penalties in the form of imprisonment which are distinctly severe. It is a very noteworthy fact that the bill proposes to give the court power to require a person convicted of a rather long list of offences to submit to such medical examination and tests as may be requisite to ascertain whether such person is suffering from venereal disease in a communicable form. The offences include not only rape, indecent assault, and loitering, importuning or soliciting, but also any attempt to commit or to abet the commission of such offences, and offences under the Vagrancy Act. The efficiency of these provisions to attain the object aimed at will depend on the degree to which magistrates make use of the powers conferred on them and the impartial efficiency of the police. If the authorities really mean business the appointment of women police officers will be necessary.

The provisions with regard to the practice of venereal quacks are not so strong as was hoped, although they stop one bolt-hole by applying the prohibition as to advertisements to "nervous debility, or other complaint or infirmity arising from or relating to sexual intercourse." The use of the term "intercourse" may defeat the object of the paragraph, and it might be better to replace it by some more general term, such as "the sexual system."

The Royal Commission on Venereal Disease strongly endorsed the recommendations of the Select Committee on Patent Medicines that all advertisements of remedies for venereal diseases should be prohibited, and added that the direct and indirect effects of these diseases upon the race are so grave and the deception practised upon the public is so extensive as to justify repressive measures. The bill now before the House of Commons deals with this matter and is drafted in accordance with the recommendations of the Select Committee on Patent Medicines, which were that all advertisements of remedies for diseases arising from sexual intercourse or referring to sexual weakness, and all advertisements likely to suggest that a medicine is an abortifacient, should be prohibited.

The British Medical Association expressed its strong approval of legislation of this character, holding that there was probably no group of diseases in which the results of treatment by unqualified persons were more disastrous, both to the individual and to the community, and took the matter to its logical conclusion, which is that the legislature should make it a criminal offence for any person other than a registered medical practitioner to treat, or to offer to treat, any form of venereal disease. The Association pointed out that failing such restriction there would continue to be many temptations for the concealment of disease, and much valuable time lost by infected persons who are attracted by false offers of a speedy and secret cure. The deputation which interviewed the President of the Local Government Board on January 24th asked for legislation to eliminate quack methods in the treatment of venereal diseases. The President of the Royal College of Physicians emphasized the point that the treatment of these diseases ought to be conducted by scientific and skilled methods, and therefore by qualified persons, and Mr. Turner, Chairman of Representative Meetings, said that the British Medical Association fully agreed with that view, and also insisted on the importance of stopping advertisements of the form of quackery in question. Lord Rhondda did not make any direct reply to the suggestion, which was supported also by Sir Malcolm Morris on behalf of the National Council for Combating Venereal Diseases, and representatives of the Association of Municipal Corporations, that the Government should introduce a bill to suppress the quack treatment of these diseases, and it will be seen that the Home Secretary's bill does not directly touch the question of unqualified practice in these respects, nor the sale of drugs or appliances for the purpose of procuring miscarriage or abortion, but it does clearly forbid all advertisements of such things by bringing them within the provisions of the Indecent Advertisements Act, 1889, and by increasing the penalties. It is argued that persons who engage in these particularly offensive forms of quack practice depend entirely upon advertisements to make themselves known to the public, and that the prohibition of such advertisements, accompanied as it is by the offer of skilled free treatment under the scheme now being put into operation by local authorities, must go far to diminish, if not altogether to abolish, the opportunity of preying upon the credulity of the public now afforded to venereal quacks and abortifacient-mongers.

THE CENTRAL MEDICAL WAR COMMITTEE.

At a meeting of the Central Medical War Committee on February 21st the chairman, Mr. Verrall, speaking on the question of the immediate outlook in respect of additional doctors for the army, and particularly in regard to the matter of calling up the whole or part of the enrolled men, said that some new departure would, in his opinion, have to be made, because even if the enrolled men were immediately called up there would not be obtained the numbers demanded by the War Office. A statement was made by Dr. Buttar, the chairman of the Executive Subcommittee, in the course of which he urged that every effort should in the first place be made to obtain the last man possible from those of military age. He considered that there were several reasons for postponing an immediate call upon enrolled men, in view of the possible development of the scheme of the Director-General of National Service, and the proposal which was in the air to make a general call for national service upon all classes of the population under the age of 50. He thought that it would be well to take an early opportunity of reviewing with the War Office its demands in the light of recent developments. The Committee discussed again the question whether the whole-time service of the country had contributed their fair quota of medical recruits to the army. It was reported that an interview had taken place with representatives of the Local Government Board and the Board of Education, when facts were brought forward showing that in respect of the Poor Law service the Local Government Board did not feel itself in a position to make any further serious calls, while it had already spared a large number of whole-time officers on the public health side. Readiness was expressed both by the Local Government Board and the Board of Education to consider any individual calls which the Committee might think it necessary to make upon their officers, but it was pointed out that the Boards had no power to call up medical men in the employment of local authorities, although they were willing to represent to such authorities the need for making the necessary sacrifices. Finally, the Committee instructed the Executive Subcommittee to inquire carefully into the matter of the enrolled men, and to

report to the full Committee on the question of notifying Local Medical War Committees that the necessity for calling upon enrolled men might arise in the near future, indicating in each case the number that it was estimated ought to be supplied from the area.

MEDICINE IN THE ARMY.

SIR ALFRED KEOGH was the guest of the Council Club of the Royal Society of Medicine at dinner on February 19th; there was a large attendance. Sir Rickman Godlee, President of the society, who was in the chair, congratulated Sir Alfred Keogh, and through him the Army Medical Service, on the conspicuous honour of the Grand Cross of the Bath recently conferred upon him by the Crown, and went on to speak of the difficulties of the situation with which Sir Alfred Keogh had been faced and the manner in which they had been overcome. Referring to the work of the Central Medical War Committee, he said that there was great need for the exercise of a spirit of charity and consideration on both sides, for it was not easy to adjust the demands of the army and of the civil population, and not a few cases the Committee had to investigate in its statutory capacity involved great hardship to individuals. Sir Rickman Godlee said that he had recently received a letter from Dr. Franklin H. Martin, of Chicago, who was known to many in this country as an extremely able medical organizer. The United States Government had formed a Committee of Defence, and one of the members was a medical man. It had had interviews with the Cabinet, and the Secretary for War had sent an invitation to the deans of each one of the ninety-five medical schools in the United States to attend a conference at Washington on January 6th to discuss the introduction of a course of military training in the medical schools. Eighty-five representatives attended, and were addressed by the surgeon-generals of the army and of the navy. The deans of the Army and Navy Medical College at Washington presented a curriculum for approval, and the deans attending the conference adopted resolutions in favour of universal training and special military training for all medical students. After this, which was in the nature of a preliminary meeting, the conference met again later, when it was addressed by the Secretary for War, Mr. Baker, who was accompanied by the Secretaries of the Navy, of Labour, and of Commerce. Mr. Baker expressed approval of the proposals made by the deans, and undertook to provide medical officers as instructors for all the medical schools of the country. The course, which was to begin on February 1st, will continue until June 1st, and it is hoped that 3,000 medical men will pass through it, and will then need only camp training to make them available as medical officers. There had been a great change, Dr. Martin added, in sentiment in the United States during the last year, and now fully two-thirds of American public men were in favour of universal military service on a plan similar to the Swiss programme. Sir Alfred Keogh, in a short speech, dwelt on the fine response made by the civil medical profession. At the beginning of the war the number of available regular officers of the R.A.M.C. was small, but the corps had been extended from the civil profession, and the response to the appeal of the army had been not only great at first but well sustained, so that now it might be said that the medical service of the army was the medical profession. The work done was highly creditable to medicine as a scientific profession, and wonderful adaptability had been shown. The demand had been large, for it had been necessary to provide for the needs of five campaigns, which were being carried on simultaneously. He paid a very warm tribute to the services of the Territorial Royal Army Medical Corps, and wound up by urging that medical students should now and in the future be trained to understand their responsibilities to the State.

THE SWEDISH MILITARY POLICE IN PERSIA.

THE account which Lord Curzon gave to the House of Lords on February 20th of the march of the force under Sir Percy Sykes from Bunder Abbas to Ispahan, and finally to Teheran—an expedition which involved a march of one thousand miles in circumstances of a most arduous and, in some places, perilous character—lends particular interest to an account recently published by Dr. Claes Carlström[1] of his experiences in Persia as a medical officer of the health service of the Persian military police. The health service was instituted in 1911, and had grown from an insignificant nucleus to an extensive network, spreading from the Caspian Sea to the Persian Gulf. The control of this force, which policed the principal highways in this part of Persia, was entrusted to about forty Swedish officers, and in 1913 two Swedish medical officers, of whom Dr. Carlström was one, were appointed as medical officers to the forces under them. Dr. Carlström, equipped with as many drugs and instruments as his grant of 5,000 francs would allow, made his way to Persia by way of Hamburg and Paris, where he absorbed as much knowledge of tropical diseases as time would allow. During the first six months he had to travel from one station to another, teaching his staff of orderlies and establishing dépôts at the most important centres. It took much time to vaccinate the members of his staff against small-pox and typhoid fever, and the long journeys, invariably made on horseback, proved exhausting in the hot weather. In spite of the great prevalence of malaria he escaped infection, thanks, in his opinion, to the use of a mosquito net and daily prophylactic doses of quinine. The venereal diseases were almost as prevalent as malaria, and in some districts assumed epidemic proportions. It was almost impossible to cope with them, for the infecting women generally eluded observation and treatment. Dr. Carlström found galyl, with a stock of which he had been supplied in Paris by Professor Moneyrat, to be quite as efficacious as salvarsan and neo-salvarsan. In spite of neglect, syphilis ran a relatively benign course, and lesions of the brain and cord were very rarely encountered. In fact, only one case of general paralysis was observed, although syphilis was widespread among the police and civil population. The other late manifestations of syphilis were common. Tuberculosis and rheumatic affections were very rare in the interior, no doubt because of the sunny climate at a high altitude and the open-air life. The only case of appendicitis seen was in a European. This immunity to a disease so prevalent in Europe, he thinks, was due to the fact that the diet of the Persian is mainly vegetarian. An English colleague of Dr. Carlström's suggested that the Persian's freedom from appendicitis might be traced to his defaecating in a crouching position and thus securing a more complete evacuation of the bowel. Opium smoking was an all-pervading custom, to which much of the Persian's degeneration could be traced. Homosexuality was also a widespread evil; one of the many proofs of its prevalence was the frequency with which anal chancres occurred.

MILK.

A RATHER gloomy view of the future supply of milk in this country during the war was taken at a meeting of the Farmers' Club, in Westminster, on February 19th. Mr. James Mackintosh, lecturer in dairy farming at University College, Reading, after stating that he estimated the value of the dairy output produced by British dairy farmers to be between £40,000,000 and £50,000,000 a year, said that before the war all the new milk required for human consumption was produced in the country, and that of the remainder of the output some 25 per cent. of the total was manufactured into cheese, butter, etc. To meet the demands of the home market large quantities of cheese, butter, etc., had to be imported, not less than 75 per

[1] *Hygiea*, November 30th, 1916.

cent. of the cheese, and 70 per cent. of the butter coming from countries outside the United Kingdom. The tendency of the new conditions was, he said, to reduce the total output of milk in this country, and it was to be feared that unless the returns from milk production were made, or allowed to become, more comparable with those from other branches of farming there would be a very serious decrease in the total output before the winter of 1918. The general opinion expressed during the discussion was to this effect, and a representative of Worcestershire declared that the dairy industry, if properly carried out, was capable of doing more to make the nation self-supporting than any other branch of farming. We may take this opportunity of supplying an accidental omission from the brief analysis of the diet of three middle-class families published last week, p. 229. The average weekly consumption of milk by the sixteen persons concerned was 4.8 pints a week, or 0.7 pint a day a head. This would give an average of protein 13.9 grams, fat 16.3 grams, and carbohydrate 20.43 grams, yielding calories 292.5, raising the total values for the three households a head to, in round numbers, protein 98 grams, fat 132 grams, carbohydrate 289 grams; and the energy value in calories a head to 2,910. The interesting note by Miss Ferguson, in which the voluntary ration is compared with the food actually consumed by labouring-class families in Glasgow in 1915–16, raises another point of very great practical importance, for the conclusion is that the adoption of the voluntary ration would raise the cost of food by 2s. 7½d. a week, while the energy value would be diminished by 309 calories a person a day. Put another way, it appears that this means a reduction of the energy value bought for a penny from 309 to 216 calories, a very serious consideration for families whose incomes vary from twenty to thirty shillings a week.

THE EFFECT OF CONTRASTED ILLUMINATIONS ON THE EYE.

DR. JAMES KERR, in a paper read before the Illuminating Engineering Society on February 20th, on the effect on the eye of varying degrees of brightness and contrast, made reference to the conditions prevailing in cinematograph theatres, and several members of the Cinematograph Commission took part in the discussion. Dr. Kerr dealt with two kinds of contrast—namely, the simultaneous, caused by glare, and the successive, as in flicker. Apparently the maximum brightness which the eye was prepared for during its long ages of evolution was the brightest sky. This could generally be taken as 2.5 to 3 candles to the square inch, and some such amount had been suggested as a standard for any visible sources of light. Indirect lighting might accomplish this to perfection; by this method the eye was saved much fatigue, owing to the elimination of violent contrasts; but this comparatively shadowless lighting was not very useful for the examination of small objects and textural surfaces. Both excessive contrast and defective contrast might be equally troublesome, and even in cases where the surfaces were of moderate brightness and no extreme form of glare would be imagined to exist, an extreme contrast or a contrast operating in the wrong direction might be inconvenient. An instance in point was stage lighting; in some cases the continued fixation of the eye on a brightly lighted stage, with the rest of the field of view in complete darkness, entailed strain. The flickering effect in the case of the cinematograph varied greatly in different halls. The films were progressively circulated from the dearer to the cheaper halls, and by the time they had reached the latter they had deteriorated considerably; this had to be considered very seriously in view of the numbers of children, whose eyes and minds and physique were in process of development, attending such displays in poor neighbourhoods. The control of the perfection of the film and of the skill of the operator raised very difficult questions, but it ought not to be impossible to arrive at least at a reasonable value for the illumination of the screen in different halls, with a minimum of perhaps one foot-candle, and also to ensure a certain amount of illumination in the hall itself and to control the switching on and off of the full lighting in such a way as to avoid sudden jerks from light to darkness and the reverse. Sir W. H. Bennett, who was in the chair, said that there was no doubt that since the introduction of the cinematograph entertainment there had been a considerable increase of eye trouble among children, and he trusted that the Commission would not overlook the possibility of physical as well as of moral harm.

HEREDITARY DEFORMITY OF THE FINGERS.

DR. H. DRINKWATER reported to the Pathological Section of the Royal Society of Medicine, on February 13th, a remarkable case of phalangeal synostosis hereditary through fourteen generations. The thumb and index were normal; in the middle finger the terminal joint was free, but the next, that between the middle and proximal phalanx, was but slightly movable; in the ring and little finger these phalanges were quite continuous. The condition was symmetrical on both hands. As to the feet, all the toes excepting the hallux were affected like the ring and little fingers. The patient's father was married twice; one of the patient's half-brothers presented the same abnormality, as did also the father and the paternal grandfather. He himself was a direct descendant in the male line from the first Earl of Shrewsbury (d. 1453), and when the body was exhumed in 1874 it was discovered that the fingers of the earl exhibited a similar variation. The mode of the inheritance of the malformation among the recent members of the family showed that it behaved as a Mendelian dominant. Dr. Drinkwater expressed the opinion that there was not any genetic relation between this condition and that of brachydactyly.

PREGNANCY AND MUNITION WORK.

IN an article on the effect of work in munition factories on pregnancy and maternity Dr. E. Bonnaire states that observation of natural labours taking place in a maternity institution showed that the infants of thirty-one mothers who had worked in munition factories were of slightly less weight than the average for that year in the institution. He considers that work in the munitions factory need not necessarily be injurious provided hours are fairly short and supervision strict; owing to the purely mechanical nature of the tasks performed, he thinks that such work is lighter than many domestic employments pregnant women are accustomed to follow. On the other hand, he believes the shocks occasioned by the movements of heavy machinery and high speed vibrations are injurious. For these reasons he would insist that women should not work in these factories for the last month of pregnancy. Further, he advises that a doctor, or failing a doctor a skilled midwife, should be attached to all factories where pregnant women are employed.

HEALTH OF THE UNITED STATES NAVY.

THE recently issued annual report of the Secretary of the United States navy gives a very favourable account of its personnel during the past year. The death-rate was 4.48 per 1,000 as compared with 8, the rate among men of the same age in civil life. The statistics of the three chief causes of death—drowning, tuberculosis, and pneumonia—all show on analysis encouraging improvement over preceding years. While tuberculosis was responsible for 30 per cent. of deaths in the civil population of the United States between the ages of 15 and 60, that disease caused 11 per cent. of the deaths in the navy in 1915. This is only what might be expected, as the sailor is a

picked man. How high the standard of physical requirements is may be gathered from the fact that of 106,392 men who applied for enlistment in the United States navy during the past year only 30.18 per cent. were accepted. The Naval Act for the current year authorized the construction of a model hospital ship with accommodation for 300 patients in peace and 500 in war. It will use oil fuel "with all that this means for comfort and cleanliness." There will be special stabilizers to minimize rolling and pitching. It will be equipped with laboratories, a complete *x*-ray installation, and a full shore hospital outfit, including ambulances. Provision is to be made for an out-patient department, where men can be examined and receive special treatment, returning to their ships on the same day. In 1914 two training schools for hospital corps men were established—one at Newport, Rhode Island, the other at San Francisco. Successful schools have also been established at Samoa and Guam for the training of native women as nurses. Appropriations for the medical department of the navy increased from £136,400 last year to £237,545 for the current year.

FOOD FOR PRISONERS.

THE British Science Guild recently appointed a committee comprising among its members Professor W. H. Thompson of Dublin, Dr. D. Sommerville, Assistant Professor of Hygiene, King's College, London, and Dr. E. P. Cathcart, Professor of Physiology, London Hospital Medical School, to advise as to the most suitable and nourishing foodstuffs to send to prisoners of war in Germany or elsewhere. With regard to the composition of parcels, it recommends: that as tinning adds from 10 to 20 per cent. to the cost of any article, tinned foods should, wherever possible, be replaced by dried foodstuffs such as smoked herrings; that where the prisoners are supplied with bread from Switzerland or elsewhere, toffee might replace biscuits in parcels, a good toffee being nourishing and much appreciated by the men; that only rich fruit cakes, and not light cakes, should be sent; that raisins and dates are preferable to other dried fruits such as prunes; that stewed mutton, or beef rations, should be sent in preference to other preserved meats; and that condensed or dried milk should be included in every parcel. In view of the undoubted adulteration and inferior quality of many articles of food now on the market the Committee lays stress on the importance of the selection of foods being supervised by a scientific expert accustomed to deal with foodstuffs, and has arranged that samples of various articles for food parcels sent out by the Central Prisoners of War Committee shall be analysed from time to time under the direction of a member of the Guild's Committee.

Medical Notes in Parliament.

APART from the debate on the Criminal Law Amendment Bill, and the fusillade of questions that Mr. MacVeagh addressed to the Under Secretary for War on the subject of "manipulative surgery," the principal features in the House of Commons in the earlier portion of the week were Mr. Bonar Law's gratifying statement as to the War Loan, and his explanation of the "frank conversations" of Sir Douglas Haig with some distinguished French journalists. Although the success of the loan had been recognized in the closing days of the subscription, Mr. Law's assurance that seven hundred million sterling of new money had been secured was immensely gratifying, and there is reason to believe that this amount will be exceeded when the accounts have been completed After some little cross examination in reference to the Haig interview, Mr. Law carried the House with him in the feeling that it was undesirable in the public interest to pursue the matter. It was made clear that the articles did not with accuracy represent the Field Marshal's talk with the French writers, and that such publication was not contemplated. On the other hand, there was no desire to reflect upon what these writers had done. Mr. Law said definitely that the articles had not been revised by Sir Douglas. He also said that Sir Douglas had discretionary power to have such occasional conferences with journalists of allied nations.

The Naval Estimates presented by Sir Edward Carson on Wednesday were for nominal amounts to allow of discussion upon different votes without disclosure of amounts involved. Sir Edward, however, gave an informative and cheering account of the work of the Admiralty, and especially of the measures being taken to cope with submarines. He was reasonably frank as to our losses of merchantmen since the new attacks have been made, and disposed of the German claim to have paralysed maritime traffic to our country by telling that at any time there may be found 3,000 vessels in the danger zone. He did not claim that immunity could be got from submarine attacks, but he did that the power of these attacks could be mitigated by the action we were taking. In this connexion he thrilled the House by narratives of encounters with submarines, where the latter had generally got the worst of the business.

The Criminal Law Amendment Bill.

The Criminal Law Amendment Bill to make further provision with respect to the punishment of sexual offences and the prevention of indecent advertisements and matters connected therewith, was introduced by the Home Secretary, the Solicitor-General, and the Parliamentary Secretary to the Local Government Board on February 15th. The following is an abstract of the provisions of the bill with the text of the more important clauses:

Clause 1 would raise the age of consent to 16.

Clause 2 is as follows:

2. *Sexual Intercourse by a Person Suffering from Venereal Disease.*—(1) A person who is suffering from venereal disease in a communicable form shall not have sexual intercourse with any other person or solicit or invite any other person to have such sexual intercourse.

(2) If any person acts in contravention of this section, that person shall be liable on conviction on indictment to imprisonment with or without hard labour for a term not exceeding two years, or on summary conviction to imprisonment with or without hard labour for a term not exceeding six months. Provided that a person shall not be convicted under this section if that person proves that he or she has reasonable grounds to believe that he or she was free from venereal disease at the time the alleged offence was committed.

(3) When any person is convicted of any of the offences mentioned in the Schedule to this Act, the court may, if they think fit, for the purpose of ascertaining whether that person is suffering from venereal disease in a communicable form, order that person to submit to such medical examination and tests as may be requisite for that purpose. If the person is a female, the examination and tests shall be conducted, if she so desires, by a female doctor.

(4) Where a person has within three months before the commission of any alleged offence under this section received a written notice, either on an examination ordered under this section, or while under compulsory detention in any prison or other institution, from a duly qualified medical practitioner that he or she is suffering from venereal disease in a communicable form, that person shall be deemed to have been so suffering at the time when the alleged offence was committed, unless the contrary is proved.

(5) An offence under this section shall be deemed to be an offence to which section twenty-nine of the Larceny Act, 1916 (which relates to the demanding of money, etc., with menaces), applies.

(6) In this section the expression "venereal disease" means syphilis, gonorrhoea, or soft chancre, or any disease of the genito-urinary organs which may reasonably be suspected to be venereal disease.

Clause 3 provides that "Reasonable cause to believe that a girl was of or above the age 16 years shall not be a defence to a charge."

Clauses 4 and 5 deal with the keeping of brothels. Keepers of brothels will be liable on summary conviction

(*a*) To a fine not exceeding one hundred pounds or to imprisonment with or without hard labour for a term not exceeding three months; and

(*b*) On a second conviction to a fine not exceeding two hundred and fifty pounds or to imprisonment with or without hard labour for a term not exceeding six months; and

(*c*) In the case of a third or subsequent conviction to a fine not exceeding five hundred pounds or to imprisonment with or without hard labour for a term not exceeding twelve months.

On the second, third, or subsequent conviction, the accused may in addition be required to enter into a recognizance to be of good behaviour for a period not exceeding twelve months, or in default may be sentenced to an additional period of imprisonment not exceeding three months.

Clause 6 gives power to magistrates on a second conviction for soliciting, loitering, etc., to impose imprisonment with or without hard labour for a term not exceeding one month.

Clause 7 (*advertisements*) deals with two matters. In the first place with the issue or distribution of advertisements of an indecent or obscene nature, and fixes the maximum penalties of one hundred pounds and six months' imprisonment. The concluding paragraphs of the clause are as follows:

(*d*) The following section shall be substituted for Section 5—

> Any advertisement relating to syphilis, gonorrhoea, nervous debility, or other complaint or infirmity arising from or relating to sexual intercourse, and any advertisement which suggests, directly or indirectly, the use or taking of any appliance, drug, substance, or thing for the purpose of procuring miscarriage or abortion, or which suggests, directly or indirectly, that any premises are or can be used for immoral purposes, shall be deemed to be printed or written matter of an indecent nature within the meaning of Section 3 of this Act.

(2) Nothing in the Indecent Advertisements Act, 1889, as amended by this Act shall apply to any advertisement by any local or public authority, or to any advertisement published in any bona fide medical or pharmaceutical publication or pharmaceutical trade list; and a person charged under that Act as so amended with publishing an advertisement, if he is not himself the advertiser, shall not be convicted if he proves that he did not know, and had no reasonable ground for suspecting, that the advertisement was of such a character as to make the publication thereof an offence.

Clause 8 deals with procedure on indictment.

Clause 9 with punishment for incest.

Clause 10 applies the Act to Scotland and Ireland.

The Home Secretary, in moving the second reading on February 9th, gave the grounds of the chief proposals. The first clause proposed to raise what is known as "the age of consent" in charges of indecent assault from 13 to 16. In effect, this bill would lay down that it should be no defence that a child—up to the age of 16—consented. Under the Act of 1880 it was assumed that a child up to 13 years of age could not consent, being too young really to understand. Clause 3 would amend Section 5 of the Act of 1885, whereby it is a misdemeanour to have, or to attempt to have, carnal knowledge with a girl over 13 and under the age of 16. It was proposed to repeal the proviso that for the person charged to have reasonable cause to believe that the girl was over 16 years of age should constitute a sufficient defence. That proviso had to a great extent nullified the section. Acquittals had amounted to as much as 50 per cent. of the charges. If the result was to some extent to protect girls over the age of 16 and up to 17, so much the better. Sir George Cave said that he had considered the question of raising the age of consent to 17, but all the experts he had consulted were against it. If he did so he would have to retain the provision as to "reasonable cause to believe"; otherwise (with the age raised to 17 or 18, as had been urged) a trap would be set for a number of people. It was proposed, however, to raise the period during which proceedings might be taken from six to twelve months. This was to be done because in many cases the girls who had been maltreated had hidden the fact until it was too late to take proceedings. With regard to houses of ill fame, it was proposed to amend Section 13 of the Act of 1885 by extending the provision against the letting of a house known to be intended for use as a brothel to cases where the house was intended for use as a place for habitual prostitution, and the penalties were to be increased to a fine of £100 or three months for the first offence, £225 or six months for the second, or £500 or twelve months for the third. The existing scale was inadequate when, as appeared from a case recently reported, a woman was making £17 a day, or at the rate of £6,000 a year, by this sort of traffic. As for soliciting, it was proposed to give magistrates power to impose imprisonment on cases of second offences, as persons had, he had learnt, paid the fine of 40s. twenty, forty, and even ninety times and had not felt it. Among the recommendations of the Royal Commission on Venereal Disease perhaps the most important were those dealing with diagnosis and the provision of institutions for treatment by local authorities. These matters were in the hands of the Local Government Board, which had already taken very vigorous action. The suggestion that unqualified practice should be restricted was, he knew, being considered by the Local Government Board for legislation. There remained matters which must be dealt with under the criminal law. In Clause 2 of the bill it was proposed to make it an offence for any person suffering from venereal disease in a communicable form to have sexual intercourse, or to solicit it or invite it. He was conscious there might be difficulties in bringing home the offence to persons who might plead they had no knowledge that they were suffering from disease. It was provided that a person convicted under the Act might be examined by a doctor—the doctor in the case of a female being a female doctor. It was provided also that the doctor who made the examination, or in case of imprisonment the prison doctor, should give written notice to any such person found suffering from diseases so that ignorance could not be pleaded. The Home Secretary next referred to the clause to stop indecent advertisements, mentioning that the old Act of 1889 omitted to deal with advertisements in papers. It was proposed to extend that Act not only to advertisements relating to venereal disease, but also to advertisements of means for procuring miscarriage or suggesting that premises could be used for immoral purposes. Sir George Cave added in closing that Mr. Herbert Samuel when at the Home Office projected a bill of the kind now submitted, and said that the draft had been taken up, with omission of some clauses and addition of others.

Mr. Samuel, after expressing satisfaction that the bill had been introduced, and strongly supporting the clause to make communication of venereal disease an offence, said he did not advocate compulsory notification of venereal disease and compulsory medical treatment, and he was glad that the bill did not contain such proposals, for the effect would be to deter persons from voluntarily seeking treatment. He did not believe it was practicable to require compulsory examination of all persons who entered workhouses or who were committed to prison. It would be an outrage to examine a person committed to prison for theft, still more for a quasi-political offence, with a view to discovering whether he was suffering from venereal disease. In support of the proposal for the medical examination of persons convicted of certain offences, Mr. Samuel referred to a case which came under his notice when he was Home Secretary. It was that of a known prostitute who was suffering from this disease in its most virulent form. She was convicted for soliciting; but the magistrates refused to sentence her for the short period which was all they could impose, and remanded her three or four times, and meanwhile she received medical treatment. This was brought to the knowledge of the Home Office, and he was obliged to say that the magistrates were acting illegally in using their remand power in this way. The magistrates protested, but the woman was released, and a few days afterwards was again found soliciting, with the certainty that she would transmit the disease to any one who had sexual relation with her. The effect of Clause 2 would, he believed, be that a man or woman would resort to the centres of treatment opened in accordance with the proposals of the Local Government Board. Mr. Samuel expressed great regret that the Home Secretary had not seen his way to raise the age of consent to 17. Were that done, and the proviso as to "reasonable belief" abolished, it would in fact afford protection up to 18. It might be said that juries might not convict, but public opinion had gone a long way in recent years. As for blackmail, if the bill contained the provision that any girl under the age of 17 or 18 convicted of prostitution could be sent to a

reformatory for this particular purpose, there could not be a case of blackmail.

Mr. Glyn-Jones, while approving of the bill, raised questions as to certain points. No exception could, he thought, be taken to the definition of venereal disease, except as regards the last part—"a disease which may reasonably be suspected to be . . ." Suspected by whom? These words might cause a great deal of difficulty. The section to prohibit advertisements, while prohibiting advertisements to the general public, would exempt from its operation advertisements in bona fide medical or pharmaceutical publications. He asked why that exemption was to be made. He could understand the medical profession saying that the general public ought not to be told in public advertisements of any remedy for these diseases, but it came rather ill from the medical profession to say, "We want you still to permit the proprietors of these remedies to tell us in our journals what these things are used for." Was it suggested that the proprietors of these medicines should tell them in their technical journals what they ought to prescribe to their patients? Another objection he had was that these journals would be found in nearly every public library.

Commander Wedgwood said the one clause of the bill he approved of was that raising the age of consent to 16; he thought it might be raised to 17, because he thought it would hit the man as well as the woman. He believed it would be very difficult to get convictions for communicating the diseases. He thought also that in a House not elected by women, and without women's representatives in it, the presentation of such a bill for the persecution of this unfortunate class of women was nothing less than iniquitous.

Mr. Rawlinson rather wished that the bill had been confined to that part dealing with venereal disease, and he thought, too, that this part had been put rather hastily together. He had nothing to say against making the communication of venereal disease a criminal offence, except that he did not think it the best way to meet a difficulty. He disagreed with the late Home Secretary in his assertion that it would be an outrage to examine all criminals in gaol who were suspected of disease. He thought it was by examination and by learning more of the different people who were afflicted with the disease, and insisting upon compulsory treatment, that the real suppression of the disease would come about. Sir Henry Craik regarded the measure as urgent. Sir George Greenwood thought that Clause 2 would have little effect, and that the only way to stamp out the diseases was by registration and inspection.

Amongst the subsequent speakers who, with qualifications, supported the second reading, Mr. Bentley Dennis observed the notice subsection of Clause 2 was very loosely drawn. The bill was read a second time, and the committee stage has been put down for Monday next.

Bonesetters.

In the House of Commons on February 20th Mr. MacVeagh put a succession of questions to the Under Secretary for War in pursuit of his demand that men who do not hold medical degrees should be employed by the army in "manipulative surgery." He first asked whether the War Office was willing to appoint immediately a committee composed of men of high attainments, yet not connected with the medical profession, in order to inquire into the question of utilizing for the alleviation of the sufferings of wounded soldiers the services of experts in manipulative surgery who did not hold medical degrees. Mr. Macpherson replied in the negative, and Mr. MacVeagh then wanted to know what was the objection to such an appointment. The Under Secretary answered that it was a very doubtful proposition to suggest that non-technical men would be good judges of technical subjects. Mr. Swift MacNeill interjected the question: "Is the Government prepared to allow men to suffer in the interests of professional trade unionists?" Mr. Macpherson protested against that statement, and said that nothing had been more admirable throughout the course of the war than the skill that had been given and the efficiency displayed by the medical profession. Sir William Collins asked whether, while not excluding investigation of any line of treatment, from whatever source it might be suggested, the Government would have regard to the risks as well as to the advantages of unqualified practitioners. Mr. Macpherson replied in the affirmative. Mr. Lynch, the Nationalist Member, who rarely misses an opportunity for the exercise of his own peculiar saturnine humour, hereupon asked whether Mr. Macpherson was aware that five members of his own Government had undergone this treatment, and did he not admit that even the life of one private soldier was more valuable than that of the whole front bench—a jest which excited laughter.

Mr. MacVeagh afterwards pursued his questions, which were apparently designed for the purpose of arguing the matter through the medium of the notice paper. He inquired whether a soldier in the West Kent Regiment—W. H. Townley—after being unsuccessfully treated at home and abroad, was discharged from the army as incurable; and whether Mr. Macpherson would call for a report on this man's subsequent medical history. The Minister replied that he had no information on the subject. Mr. MacVeagh next asked whether the Minister was aware that five of the thirty officers of the 7th Oxfords were unfit for military service until they had undergone "manipulative treatment"; whether they had previously been treated unsuccessfully by medical practitioners; and whether they were now on active service in France. Mr. Macpherson said that he had no information. Mr. MacVeagh further asked whether the medical profession in France was availing itself of the service of experts in manipulative surgery for the treatment of wounded soldiers, and whether the Under Secretary would state on what grounds the War Office at home refused to allow "a similar dilution of labour." Mr. Macpherson answered that he had no information on the first part of the question. As regards the second part, he replied that under the terms of the Medical Act no person could be employed as a surgeon in military service who is not registered under that Act. On the suggestion by Mr. MacVeagh that in the report of the British Medical Committee the statement was made that manipulative surgery was being used in France, Mr. Macpherson replied that it would be much better to debate the subject. He added we not only have the finest doctors and surgeons, but also the finest hospitals where the men are treated. Mr. MacVeagh put several other questions of the same character, submitting that highly placed officers in the services had been treated by manipulative surgery, and that privates failed to get the same expert assistance. He talked of this as "a scandal," but the Speaker pulled him up, reminding him that he had no right to debate the question then.

On February 21st Mr. Peto asked the Under Secretary of State for War whether his attention had been called to the offer of Mr. H. A. Barker to treat, without charge, by his system of manipulative surgery, officers and men who are disabled by joint injuries; and whether, "in view of the evidence of the success of this gentleman's methods," he would take steps to appoint a committee of surgeons to investigate and report upon his methods. Mr. Macpherson replied that he had nothing to add to the answer he gave on Tuesday. Mr. Peto: Is it worth while to have the views of eminent and orthodox surgeons on this man's work, and the evidence he can bring before them? Mr. Macpherson: I have seen the views of very eminent surgeons, and they are all against it. Mr. Peto: Has the hon. gentleman the evidence of people of the highest position who would give him exactly the opposite impression? Mr. Macpherson: No, I have not. Mr. Peto: Will the hon. gentleman be prepared to do so? Mr. Macpherson: Certainly. Mr. Lynch: What are the surgical qualifications of Mr. Barker? Mr. Macpherson: I can only say that Mr. Barker's name is not in the *Medical Register*.

It is understood that a movement is on foot to form a parliamentary committee to urge upon the War Office authorities the desirability of making the fullest possible use of all assistance available for the manipulative treatment of wounded soldiers. It is said that some fifty members are showing sympathy with the proposal, and that a meeting regarding it will be held next week. It is probable that a discussion on the subject will be raised upon one of the medical votes when the Army Estimates are taken. Mr. MacVeagh's intention is to move a reduction of a vote in order to divide the House on the question.

THE WAR.

ARM STUMPS AND ARTIFICIAL HANDS.

DR. A. STADLER, writing on the formation of arm stumps suitable for the voluntarily movable artificial hand,[1] refers to many details of practical importance recently worked out at the experimental institution at Singen. The principle of the voluntarily movable artificial hand is to make use of the contractile power of the muscles of the stump. The power is transferred from the muscle to the apparatus through the intermediation of a metal bar inserted in a canal, "the power canal," made by operation through the soft parts of the stump, including the muscle itself. The muscles of a stump are as a rule capable of little function, but by graduated exercise the power of voluntary movement may be restored in them. Even then, it is found that there is no discrimination between flexor and extensor actions, the two sets of muscles acting together. By prolonged education the power of using the flexors apart from the extensors may be attained; and it is then usually found that the extensors also are capable of isolated contraction.

Dr. Stadler lays it down as a general rule that flexors should be used for flexor movements and extensors for extensor movements. He considers it advisable to reverse the arrangement only in cases where the power of the extensors greatly predominates over the flexors; when this reversal had to be made the education of the muscles proved a much more difficult and prolonged process.

The method adopted for deciding which muscle or set of muscles should be used for the power source was as follows: The muscles to be tested were firmly gripped with the thumb and forefinger, and the patient was made to contract them. By repeated observation it was found possible to ascertain which muscles contracted with most vigour. Through these the "power canal" was made.

The stump muscles, it was found, could not be used as a source of power unless on contraction they formed a considerable fleshy swelling, "the power swelling," and for this to form the muscle must be loose and not adherent to bones. In some stumps a sufficient "power swelling" was already present; in others it had to be provided.

Dr. Stadler states that the conditions are most favourable in arm stumps of moderate length, those including somewhat more than the upper third of the arm. In these it was not usually necessary to provide a "power swelling"; it sufficed to make the canal through the muscles at the spot where they were most movable. Specially favourable were these stumps when no muscular adhesion to bone had occurred, and where, as often happened, the soft parts were so loose that they could be freely moved in a longitudinal direction over the bone, like a sleeve. Where the muscle had become adherent to bone, much, it was found, could often be done by massage; but if this failed, the muscles were loosened by operation.

In all other arm stumps, Dr. Stadler states, a "power swelling" had to be provided before the power canal was made, in order that sufficient shortening might be secured. In short arm stumps the muscles were frequently so adherent to the bone that no contractile force was present until a "power swelling" was made. It was necessary to isolate and loosen the muscular belly, but much discrimination was called for in order to preserve useful attachments. In very long arm stumps, where more than two thirds of the arm remained, a "power swelling" was only obtainable when the muscles were extremely movable over the bones. This mobility diminished with the length of the stump, and was usually very slight in cases of exarticulation through the elbow-joint.

Forearm stumps presented many difficulties in the way of forming a "power swelling"; the presence of tendons was an obstacle, and the conditions of nutrition were not favourable for the healing of the canal. The conditions for forming the swelling were found to be best at about the middle of the forearm, in the fleshy portion of the flexor and extensor muscles. In very short forearm stumps the conditions were good for providing the "power swelling"; but Dr. Stadler had recently observed a tendency in this situation for the flexor muscle to undergo undue hypertrophy, so that complete flexion at the elbow was prevented by the bulk of the muscle. He suggests that this objection might be overcome by using the triceps and brachialis muscle as the source of power instead of the forearm flexors, but in that case the movements of the fingers independently of the forearm would be lost.

Dr. Stadler states that in all forearm stumps it was impossible to make the "power canal" without previously forming a "power swelling." The mobility of the muscles in these stumps was generally so slight that it was necessary to loosen the muscles before placing the canal. In some cases it might even be considered justifiable to shorten the stump by several centimetres in order to render the conditions more favourable. Reamputation was necessary also when ankylosis between radius and ulna had occurred. On the other hand, where exarticulation through the wrist-joint had been performed, it was a mistake to shorten the stump. The rotatory movement of the forearm should be preserved; any lack of mobility in the forearm muscles should be corrected by loosening the tendons at the lower end, and the power canal should be placed higher up in the forearm, through the fleshy substance of the flexors or extensors. A difficulty in connexion with forearm stumps was the tendency of the power swelling to undergo permanent retraction and thus loss of force. This tendency Stadler considers to have been due to the absence of any counteraction to the normal tonus of the muscle. To meet this difficulty he had successfully provided counteraction by means of a spring. In upper arm stumps the effects of retraction were not so obvious; the lifting power of the muscle generally remained adequate notwithstanding the retraction.

In discussing the formation of the canal, Stadler lays stress on the point that the skin flaps, which are rolled together through the muscle, should be at least 4 cm. wide. If made narrower than this, a tendency to patchy necrosis arose, which greatly hindered the healing of the canal. Good resistance on the part of the tissues of the canal was only obtained by primary healing; at spots where secondary healing occurred the tissue resistance was always greatly reduced. Dr. Stadler's paper is illustrated by numerous photographs of stumps with their "power swellings" and "power canals," and also of the varied and delicate voluntary actions that can be performed with the artificial hand, such as picking up a match, tearing off a slip from a wall calendar, and many others.

[1] *Kriegschir.*, Heft 29, p. 623, *Beitr. z. klin. Chir.*

APPLIANCES AT THE MILITARY ORTHOPAEDIC HOSPITAL, VIENNA.

DR. OSKAR STRACKER has made a report[1] on some recent improvements in orthopaedic appliances designed in the military orthopaedic hospital of Vienna. He gave a brief description of the working organization of the institution. Apart from the invalid school, the hospital has a department under the direction of a staff of expert mechanicians whose duty it is to invent new apparatus and prepare models. The models are then tested on the patients of the invalid school. They are next passed on to the manufacturing department where they are reproduced in quantity. A third department is reserved entirely for repairs.

The more interesting of the improvements described by Dr. Stracker are those relating to paralysis of the peripheral nerves. He has designed an apparatus which proved of much use in paresis or paralysis of the deltoid muscle. Among plexus wounds it was not infrequent to find a lesion of Erb's point or in its neighbourhood. In such cases the deltoid and biceps or one of these muscles was affected. Stracker states that the well-known disability arising from paralysis of the deltoid could to a large extent be mitigated by an apparatus he had designed to assist in keeping the arm loosely away from the body without hampering the actions of the sound muscles. This apparatus consisted of two limbs connected by a hinge. One limb carried a curved plate for the upper arm to rest on; the other ended in a cylindrical bar which passed through two rings fixed to a vertical splint placed along the side of the body in the mid-axillary line. Inferiorly the vertical splint bore a pad, modelled to the iliac crest, on which it rested, and was bound to the body by two belts. At the hinge joint in the axilla a metal wire was wound round the parts so as to

[1] *Kriegschir.*, Heft 29, p. 653, *Beitr. z. klin. Chir.*

form a spring which held the limbs of the apparatus apart. Movements of the arm are stated to be greatly facilitated by this apparatus. Adduction of the arm by compressing the spring gave the impetus for abduction. Dr. Stracker reports that painters, tailors, builders, and others, have been rendered capable of resuming work with the assistance of this apparatus.

For paralyses of the flexors of the elbow Dr. Stracker found a spring running over the front of the elbow to be the most suitable contrivance. A metal rod passed down on either side of the limb was fixed by bands to the arm and forearm. The rods were hinged precisely in the axis of the elbow joint, and to them were attached two spiral springs so arranged as to cross in front of the elbow. One end of each spring was attached by means of a leather strap, perforated to enable the spring to be tightened or loosened as required. The springs were made of such strength as to keep the elbow flexed and at the same time allow the triceps muscle to overcome them.

For wrist-drop Dr. Stracker had used several types of appliance based on a design by Dr. Spitzy, consisting of a leather manchette for the forearm, on the flexor side of which a flat metal bar was fixed. The bar passed along the palm, and at its end was a transverse piece which supported the hand along the line of the metacarpo-phalangeal joint. The thumb was held away from the palm by a steel spring running from the outer side of the manchette. The support given by the transverse bar enabled the more delicate actions of the fingers to be executed, as in writing, playing, typewriting, sewing, and so forth. Where the aim was simply to keep the hand raised a metal knob acting against the hollow of the hand was substituted for the transverse bar. Where the action of grasping was required the metal bar was placed on the extensor side of the manchette, and the transverse bar, lying across the knuckles, was curved inward towards the palm at its extremities. To the hooks thus formed a strap was attached running across the palmar aspect of the metacarpo-phalangeal joints and supporting the hand, and the action of grasping was not interfered with.

For raising the point of the foot in "dropped-foot" Dr. Stracker used a very simple contrivance. From a metal bar attached on either side of the leg and passed down to the heel of the boot two short horizontal rods projected backwards above and below the hinge at the ankle. Between the extremities of these rods a pressure spring was inserted, the action of which was to dorsiflex the foot. Dr. Stracker concludes his report with what he appears to regard as the fundamental dogma of orthopaedics: "That which is simple is good; that which is complicated is bad."

CASUALTIES IN THE MEDICAL SERVICES.

ARMY.

Died of Wounds.

Captain J. Macallan, R.A.M.C.

Captain James Macallan, R.A.M.C., died on February 9th of wounds received on February 6th, aged 30. He was the fourth son of Mr. Andrew Macallan, solicitor and bank agent, of the National Bank House, Rutherglen, and was educated at Glasgow University, where he graduated M.B. and Ch.B. in 1910, subsequently filling the post of senior house-surgeon of the Royal Infirmary, Wigan. He joined the Special Reserve of the R.A.M.C. as lieutenant on September 17th, 1914, was promoted to captain after a year's service, and was attached to the East Lancashire Regiment.

Died on Service.

Lieutenant-Colonel F. Flashman, A.A.M.C.

Lieutenant-Colonel Froude Flashman, Australian Army Medical Corps, died of pneumonia in No. 14 General Hospital, Boulogne, on February 12th, aged 46. He was educated at Sydney University, where he graduated M.B., and was assistant physician to the Prince Alfred Hospital, Sydney. He came to Europe in the Australian A.M.C. in July, 1915, and was for some time employed in No. 3 London General Hospital, Wandsworth, before going to France.

Wounded.

Captain A. H. Ernst, R.A.M.C. (temporary).
Captain W. S. Evans, R.A.M.C. (temporary).
Captain C. W. Robinson, R.A.M.C.(T.F.).
Lieutenant R. A. Slater, R.A.M.C. (temporary).

Deaths of Sons of Medical Men.

Clark, William G., Captain London Regiment, only son of Dr. G. Clark, of Stockwell, reported missing on July 1st, 1916, now presumed killed on that date, aged 22. He attained the rank of captain on August 29th, 1914.

Stevenson, John Huntley Wickham, Second Lieutenant Indian Army, younger son of Surgeon-General H. W. Stevenson, I.M.S. (retired), of Castletown, Isle of Man, died of wounds on February 5th. He was educated at Wellington, entered Sandhurst in August, 1914, got his first commission on January 13th, 1915, and was posted to the 46th Punjabis.

Medical Student.

Stewart, N. W., Lieutenant Royal Scots, attached to Royal Flying Corps, the elder son of the Rev. Alexander Stewart of Edinburgh, who died of wounds on January 23rd, was a student of science and medicine at the University of Edinburgh, where he took first and second-class certificates and a medal.

HONOURS.

A fifth supplement to the *London Gazette* issued on February 15th contains the names of the following medical officers as recipients of honours and rewards for services rendered in connexion with military operations in the field:

To be C.M.G.—Colonel Patrick Hehir, C.B., M.D., F.R.C.S., I.M.S.

Awarded Bar to the Military Cross.—Temporary Captain Allen Coulter Hancock, M.C., R.A.M.C.

To be Brevet-Colonels.—Lieutenant-Colonels W. G. Beyts and L. P. More, of the R.A.M.C. (with effect from January 1st, 1917, inclusive).

To be Brevet-Lieutenant-Colonels.—Major F. A. F. Barnardo, M.D., F.R.C.S., I.M.S. (with effect from January 1st, 1917, inclusive); Major A. W. C. Young, M.B., I.M.S. (with effect from June 3rd, 1916, inclusive).

The King has granted permission to the following medical officers to wear the decorations and medals indicated, conferred upon them by the Allied Powers for distinguished services rendered during the course of the campaign:

By the Emperor of Russia.

Order of St. Anne.—Third Class (with swords): Colonel Gerald Cree, C.M.G., A.M.S.

Medal of St. George.—Second Class: Senior Subassistant Surgeon Maula Baksh, Imperial Establishment, Hong Kong-Singapore Artillery.

By the King of Serbia.

Order of the White Eagle.—Second Class (with swords): Surgeon-General Francis Harper Treherne, C.M.G., F.R.C.S. Third Class (with swords): Lieutenant-Colonel (temporary Colonel) Alfred Ernest Conquer Keble, D.S.O., R.A.M.C. Fourth Class (with swords): Lieutenant-Colonel (temporary Colonel) Denis Joseph Collins, M.D., R.A.M.C., Lieutenant-Colonels Richard Reginald Sleman and John Robert Whait, M.B., of the R.A.M.C.; Majors Richard James Bradley, M.B., Robert Welland Knox, D.S.O., M.B., and Walter Scott Patton, M.B., of the I.M.S.; Major Roy Stanley McGregor, Australian A.M.C. Fifth Class (with swords): Captain (temporary Lieutenant-Colonel) Henry Wade, M.D., F.R.C.S., R.A.M.C.; Captains (temporary Majors) Edmund Tytler Burke, M.B., R.A.M.C.(S.R.), Edward Leopold Rowse, M.D., R.A.M.C.; Captains Heerajee Jehangir Manockjee Cursetjee, M.B., Herman Falk, M.B., Edward Slade Goss, and Vivian Bartley Green-Armytage, of the I.M.S.; Captains Robert Carlyle Carlyle, M.B., James Gerald Fayrer Hosken, Robert Proudfoot, M.D., and Hugh George Trayer, M.B., of the R.A.M.C.; Captain Wentworth Roland Caneagh Mainwaring, Australian A.M.C., attached Australian Light Horse; temporary Captains Reginald Anson Mansell, M.B., and Joseph Arthur Arkwright, M.D., of the R.A.M.C.; Lieutenant Nilkanth Sheiram Jatar, I.M.S.

Cross of Karageorge.—First Class (with swords): Assistant Surgeon George Tresham Wrafter, I.S.M.D., Subassistant Surgeon Rawail Singh, I.S.M.D. (attached Sikhs).

By the King of the Belgians.

Officier de l'Ordre de la Couronne.—Major Henry Sessions Souttar, R.A.M.C.

Decorations and medals have also been conferred upon a large number of non-commissioned officers and men of the Royal Army Medical Corps and of the Indian and Colonial Medical Corps.

England and Wales.

CENTRAL MIDWIVES BOARD.

AT the monthly meeting of the Central Midwives Board, on February 15th, it was announced that the Acting Registrar of the General Medical Council had asked the Board to forward to local supervising authorities (*a*) a copy of a circular letter addressed by the Council to all the registered medical practitioners in England and Wales calling their attention to the provisions of the Midwives Act, 1902, which prohibits any woman, not being certified under the Act, from attending women in childbirth habitually and for gain otherwise than under the direction of a qualified medical practitioner; (*b*) a copy of a warning notice issued by the Council pointing out that any registered medical practitioner proved to have been guilty of "covering" an uncertified woman, will be liable to have his name erased from the *Medical Register*. The Secretary stated that the Local Government Board would wish to distribute the letter and notice to the various local supervising authorities, and that the General Medical Council had agreed to this. The Board raised no objection to this arrangement being carried out.

In reply to a letter from the town clerk of a provincial city respecting the conduct and action of a local medical practitioner in connexion with an alleged breach of Section 1 (2) of the Midwives Act, 1902, on the part of an uncertified woman, the Board decided to forward the papers in the case to the General Medical Council and to express its readiness to appear as prosecutors in the case if so desired. In respect of a similar charge against a registered medical practitioner in another place the Board agreed to request its solicitor to consider the evidence available and advise as to whether action should be taken.

Revised lists of institutions at which midwives may be trained and of recognized lecturers for the year April 1st, 1917, to March 31st, 1918, were approved, and the names of fifteen women were removed from the roll on account of old age, ill health, and inability to comply with the rules.

CORONER AND DOCTOR.

At an inquest held at Altrincham by the coroner, Mr. Yates, on February 12th, some remarks were made about a medical man who had been in attendance on the deceased which can only be regarded as extremely unfair. It appears that Elizabeth Smith, aged 90, had been attended a short time before her death by Dr. Blease junior, and that having been left alone in her bedroom for a few minutes she was found lying on the hearth with her head on the fender. It was supposed that, feeling cold, she had seated herself near the fire and fallen on the bars. A verdict was returned of accidental death from shock brought on by burning. Evidence was given by the coroner's officer that when he went for what he called "the usual note" for the coroner, Dr. Blease senior ordered him out of the surgery, and Dr. Blease junior asked what authority he had to ask for the note, saying it was an attempt to get medical information for nothing. The witness replied that it was the usual custom for the doctor to send the coroner a note, but Dr. Blease refused to give it. The coroner said it was the first time he had ever been treated in so discourteous a manner by a medical man. The note was wanted to enable him to decide whether a *post-mortem* examination was necessary or not, and he considered it contemptible on the part of the doctor to charge him with trying to obtain medical information without payment. The foreman of the jury expressed sympathy with the coroner's view; but the coroner cannot well be ignorant of the fact that he had no right to demand medical information from the doctor unless a summons to attend at the inquest were issued; the doctor would then have been entitled to the prescribed fee, and Dr. Blease was perfectly within his right in refusing to give such information in response to a request made in the manner described. This being so, the statement of Dr. Blease that it was an attempt to obtain medical information without paying for it seems to have been a common-sense interpretation of the facts. If the jury were not distinctly informed of the doctor's rights, they can perhaps hardly be blamed for their comments, but the profession owes a debt of gratitude to Dr. Blease for resisting a practice which is far too common with coroners.

Scotland.

SPHAGNUM MOSS DRESSINGS.

A NEW dépôt of the Edinburgh Committee for the preparation of sphagnum moss dressings was opened by the Lord Provost on February 13th in Merchiston Crescent, Edinburgh. Among those who attended the ceremony were Lieutenant-Colonel Cathcart, F.R.C.S., the originator of the movement, Dr. McKenzie Johnston, director of the organization, and Sir John Cowan, through whose influence the large mansion house of Craigroyston was lent to the committee for its work. The Lord Provost said that in July last only 20 dressings were produced in the first week, but the average output for 1916 was 2,000 dressings a week. The committee had branches in all parts of Scotland to collect the moss, with the result that 68,000 dressings were sent out. There were other organizations at work in Glasgow and in many districts of England.

INSANITY AND THE WAR.

Dr. Oswald, medical superintendent of the Glasgow Royal Asylum, in making his report to the annual meeting on February 15th stated that there were 432 patients in the asylum at the beginning of the year, and 437 at its close, the average number resident being 436. The admissions into all Scottish asylums in 1916 showed that insanity was nearly equally divided between the sexes, the greater frequency of general paralysis and alcoholic insanity in men being balanced by the greater number of women who suffered from melancholia, or broke down at the climacteric period. He believed that the effect of the war, opening up to women a greater variety of occupations, would increase their mental stability, for a woman would be better able to find out for what occupation she was best fitted; undoubtedly some of the female admissions during the last year owed their illness in part to being engaged in work for which they were temperamentally unsuited. He referred especially to students or teachers. Patients suffering from delusional insanity were frequently dangerous and when the disease was confirmed their seclusion was necessary in the interests of society. Such persons were frequently clever and well educated. They were regardless of the rights of others, and among them were at least some of the eccentrics and "anti's" of present-day notoriety. The onset of the war had arrested for a time the course of the disease in some of these cases, owing to its compelling effect on the mind; time, however, bred familiarity even with a world-war, and old ideas, normal or abnormal, reasserted themselves; in the last six months he had seen a number of patients whose illness began before the onset of the war, which had checked it, but who had of late shown a return and aggravation of their symptoms. The definitely ascertained cause of the insanity in twelve men and five women was alcoholic excess, the largest number reported for ten years, and the highest percentage on the admission-rate for that period. The admissions, however, were drawn from so large an area and the figures were so small that he did not feel justified in drawing conclusions. He was informed, however, that the admissions into one of the district asylums in Glasgow in 1916 showed that alcohol was the cause of the illness in 5 per cent. more than in the previous year. The war, in his opinion, had not led to any increase of insanity among the civilian population, but among those on active service there were many instances of nervous and mental breakdown directly due to its effects. A large proportion would recover, and every effort was being made to lessen this terrible aftermath of the war. The influence of the war on the mental stamina of the nation in the near and remote future could not be estimated but was found to be far-reaching. He believed that there was at present no actual increase of insanity, and the report of the General Board of Control for 1915 showed an actual decrease of 130 patients for that year, the first time such a decrease had been recorded in any year. Insanity was most common among the poor, and poverty, insufficient nourishment and anxiety were powerful factors in its production. The high standard of living at present enjoyed by the poorer classes, their freedom from the fear of want, and their constant and well-remunerated employment had reduced the number of cases due to this cause. The medical officer of

health for Glasgow had reported that the death-rate for 1916 was the lowest recorded, and Dr. Oswald believed it not improbable that when statistics were available, a low incidence of insanity would also be found. Of the therapeutic value of work on farm and garden as a healer of minds there could be no doubt, and he could see in the awakening practical interest taken in the cultivation of the land by a large number of men and women a double advantage—an increase in the national food supply and a betterment of the mental and nervous health of those who undertook such work. The Dean of Guild, who presided, warmly congratulated Dr. Oswald on his statement, and congratulated the directors on their decision to admit soldiers and sailors mentally affected by the war. This was regarded not only as a patriotic duty, but as a legitimate extension of the objects for which the institution was founded. He also congratulated the directors on the economy with which the institution was conducted; the cost of maintenance had increased by 30 per cent., but no increase had been made in the rates for patients.

Eyesight of Munition Workers.

At the annual meeting of the Royal Victoria Eye Infirmary, Paisley, Dr. Gilchrist stated that last year foreign bodies had been removed from the eyes of no fewer than 2,135 workers, many of them employed in munition and armament factories. A number of cases of burns of the face and eyes among men and women employed in factories had also been treated. He strongly urged that the use of protective spectacles should be enforced; by their use the number of cases of injury would be largely diminished, and some eyes which might be totally lost would be saved, compensation claims reduced, time lost by workers largely saved, and the work of hospitals lessened.

Ireland.

Dispensary Doctor of Military Age.

At the last meeting of the guardians of the South Dublin Union a letter from the Local Government Board was received pointing out that Dr. Andrew Ryan, who was elected by the guardians the previous week as temporary medical officer of the Clondalkin Dispensary District, was recently qualified, and eligible in respect of age for service in the R.A.M.C. In view of the urgent need for the services of such men in the army, and the fact that the guardians are in a position to make other sufficient arrangements for the care of the sick poor of Clondalkin by the appointment as resident temporary medical officer of a doctor above military age, or otherwise ineligible for military service, the Board declined to sanction Dr. Ryan's temporary employment in the dispensary district as proposed. It was ordered that a copy of the letter be sent to Dr. Ryan.

Blackrock War Hospital Supply Dépôt.

At a public meeting held at Blackrock, co. Dublin, under the auspices of the Irish War Hospital Supply Dépôt, Mr. J. P. McCabe, J.P., who was in the chair, said there was no work to which men and women could better give their time than helping wounded soldiers. Those who were fighting the good fight deserved the sympathy of all, and the dépôt had the hearty support of the Urban Council. Dr. R. C. Peacocke, Secretary of the East Leinster Division, British Medical Association, in proposing a resolution that the dépôt was worthy of every support in carrying out its work of mercy, said that the object of the meeting was to ask for volunteers to give their spare time in providing splints, crutches, etc. During the coming big push more and more bandages, splints, etc., would be wanted. The War Office had taken over the Meath Industrial School for the purpose of a military orthopaedic hospital. It would accommodate some 200 soldiers, and for it more hospital requisites than ever would be wanted. Lady Dockrell, who seconded the resolution, said that it was not only a work of mercy, but an obligation, to look after the maimed and wounded soldiers, and a work which demanded the support of all. The resolution was unanimously adopted. Working and general committees were appointed on the motion of Rev. J. Pearson, B.D.

Correspondence.

LOOSE BULLETS AND FOREIGN BODIES IN THE HEART.

Sir,—The case which you record[1] of the wanderings of a shrapnel bullet in the circulation is of very direct interest to us who are preparing for exhibition the War Office collection of pathological specimens.

In that collection there are three specimens where a bullet or part of a bullet was found free in the ventricle of the heart, and yet in which there was no trace of a wound in the wall of the heart. We had supposed that such bullets had found their way into a large vein, probably in that part of the inferior vena cava which is almost surrounded by the liver. We had a difficulty in supposing that a bullet could be carried along by the venous stream, but Dr. Grandgérard's case, to which you have drawn attention, sets our difficulties at rest. Dr. Grandgérard observed the bullet in motion in the auricular region of the heart, then saw it in the right groin, then over the base of the sacrum. So it is quite evident a bullet may be swept with, or fall against, the venous current.

My chief object in calling attention to the problem of intracardiac bullets—the condition is not rare, for I have seen records of at least eight cases—is in the hope that the officers of the R.A.M.C. may make a systematic search of the great veins in such cases, in order to determine the site where such bullets enter the venous circulation, and discover the reason why an entry may be made without noticeable haemorrhage.

In every case the bullet is coated with fibrin. In one case Colonel H. M. W. Gray successfully removed the bullet from the right ventricle, death occurring four days later, not as the result of the operation.[2] There is no record of such a bullet being carried into the pulmonary artery; that is a remarkable circumstance. If the bullet is loose within the right ventricle—or auricle—it might be possible, by manipulating the position of the patient, to bring the bullet into a part of the body which is more accessible to the surgeon, as in Dr. Grandgérard's case.

I should like to take this opportunity of stating that the collection of war specimens which is being assembled here by order of the Medical Department of the War Office, now amounts to over 1,200 specimens. Mr. S. G. Shattock and Mr. Cecil Beadles are, as your readers know, now engaged in preparing specimens for exhibition.—I am, etc.,

ARTHUR KEITH.

Royal College of Surgeons of England,
Lincoln's Inn Fields, W.C.,
February 19th.

THE PROPHYLAXIS OF VENEREAL DISEASES.

Sir,—Will you once more grant me space for a few remarks on this subject, suggested by the matter contained in your issue of February 10th relating to the discussion on January 31st at the Royal Institute of Public Health on the lecture by Dr. C. J. Macalister, as well as to the letter of Mr. Hugh Elliot on which you have commented?

It is gratifying to those who regard the prevention of all kinds of infective diseases by all possible means as the duty of all medical practitioners to know that at least two very prominent members of the National Council for Combating Venereal Diseases are wholly in accord with their views. This accord was proved by the speech of Dr. Mott, whose special knowledge and labours as a member of the late Royal Commission on Venereal Diseases were so invaluable, and by the striking and clearly reasoned remarks by Dr. Otto May—one of the secretaries to the National Council—who urged that the question of prevention was a purely medical one, and that propaganda on the prevention of infection by venereal diseases should be persevered with in spite of opposition.

The further facts that the lecturer, in his reply to the speakers at the discussion, agreed that the point as to prophylaxis must not be put on one side, and that no speaker challenged the apparently general unanimity of the meeting, indicate that not much, if any, opposition is likely to arise in medical quarters to the taking of practical measures towards widely popularizing a knowledge

[1] BRITISH MEDICAL JOURNAL, EPITOME, February 17th, p. 7.
[2] BRITISH MEDICAL JOURNAL, 1915, vol. ii, p. 561.

of the scientific means of prophylaxis that are now and have for some years been available, and shown to be efficacious.

Although I welcome and agree with the views expressed by Mr. Hugh Elliot in his very interesting letter as to the necessity of keeping apart any moral or other question from the purely medical subject of prophylaxis, I am in accord with you, Sir, that Mr. Elliot has not made out his implied contention that in the present instance medical "trades-unionism" has played any part in putting obstacles in the way of public knowledge of the antivenereal prophylactics now in question. The real cause of opposition has been, and is still in some quarters, of lay or non-medical origin. This is called "public opinion," and the undue silence of the medical profession on the matter is the result of undue submission to lay objections and to an untested and probably quite overrated or even non-existent "public opinion," rather than of any desire to preserve a monopoly of knowledge on medical subjects which are of the first importance to the community.

These general considerations lead me to add that I do not think that the medical profession is exercising itself, or will exercise itself much on the question as to whether or not the knowledge of the means of prevention should be given by medical men only to those who consult them in special instances. It is far more probable that in view of the wide-reaching evils of these diseases, and the impossibility of establishing a general eradication or "functional paralysis" of a primary and necessary instinct, medical practitioners will now feel it to be their duty to pay less attention to sporadic, though sometimes powerful, attempts to hinder their efforts, and to spread their knowledge of scientific prophylaxis as far as possible.

One word more concerning the efforts recently made to check the evils caused by advertising and other unlicensed practitioners, especially in relation to venereal diseases. Doubtless, apart from any governmental action, an immense reduction of this plague could be effected by a general resolve on the part of newspaper proprietors to refuse admission to quack advertisements. But this can scarcely be hoped for; and if anything practical is to be done in this direction it must rest with the Local Government Board, if not with Parliament. This matter, indeed, is now apparently under consideration by the Board. An opportunity thus presents itself for the Medical Department of the Local Government Board to urge also the importance of no longer setting aside the question of prophylaxis, and of taking prompt steps to facilitate the wider knowledge of practical means for efficient prevention.—I am, etc.,

London, W., Feb. 14th. H. BRYAN DONKIN.

SIR,—In problems involving the consideration of sexual relations—the oldest question that has puzzled mankind—to take any but the widest view is deplorable. Particularly repugnant to those who would honestly seek the best solution of these grave matters is anything in the nature of "special pleading." Unfortunately, the letter of the editor of *Downward Paths*, in reply to Mr. Hugh Elliot, is open to this objection. For example, her argument, comparing prophylactic advice regarding venereal disease to advice as to how to commit crime, is so grossly unfair and so physiologically absurd as to need no refutation, while, indeed, it damages the writer's admirable cause. Also the plea that "silence" is the best answer to the "taunt" of "preserving syphilis in the interests of morality" may mislead those unfamiliar with the ready wit and cleverness of woman in controversy. (When, by the way, does an argument become a "taunt"?) So far as recollection serves, silence has not been commonly employed by woman equipped with a passable reply.

However, I have no desire to add any further "taunt" to the one complained of, neither have I any wish to enter into what at the best is a very difficult and delicate discussion, wherein one would find it wellnigh impossible to express all that one believes without offending many of one's most respected fellow creatures. But I do feel most strongly that narrowness of view, and the import of feelings and sentiments, whether religious, sexual, ethical, or what not, must be sternly repressed in dealing with this question, affecting as it does in the highest degree the future development and welfare of the human race. For what higher duty can we know than to work for that great end? I would therefore emphasize that the prophylaxis under discussion is *immeasurably the lesser of two evils*, and would beg that this fact may never be lost sight of.

In deciding the other ever-present and ever most serious question, as to how to minimize prostitution, do not let us forget that the physiological factor is one important issue involved. While the male can, perhaps without bodily harm, lead an absolutely celebate life, yet for the female to make the very best of her life and attributes the sexual act is a physiological necessity, a fact often unsuspected by the individual, to whom it may be most distasteful. The temptation to evade the terrible responsibility of advocating any particular means of dealing with these stupendous issues is very strong. Nevertheless the subject absolutely demands the fullest examination at the present time. Its urgency is such that we may yet see the man arise bold enough to place before the people reasons for the legalization of carefully regulated polygamy. Surely as worthy of consideration as regulated vice! At any rate, even this expedient of a lower type of civilization might be considered after the war, if only on account of the personal health of the surplus female, as well as to permit her the possibilities of happy motherhood.

Woman is so splendid in the crisis through which we are passing that one cannot imagine the man who, whatever his former views, would now deny the vote to those who want it, or, indeed, any other of the "woman's rights" she may wish to claim—even the right to lead a physiological life.—I am, etc.,

London, W., Feb. 17th. GEORGE ROWELL.

SIR,—May I venture to trespass once again upon your space in order to reply to the question which you put to me in your issue of February 10th, and to reply also to the editor of *Downward Paths* in that of February 17th? You ask me where the obstacles lie in the way of a layman who desires to study medical science, and you point out very truly that it is open to any one to study medical writings. In reply, I would urge that in no science is more book study of any great value. Practical work and first hand observation are essential to give reality and bottom to any scientific knowledge, and in the way of these there are great obstacles to study by laymen. In making this remark I do not for a moment suggest that these obstacles should be removed. They exist for the protection of society against unqualified bungling. I named the fact, not by way of criticism, but in support of my contention that medical knowledge is and must continue to be to a great extent a monopoly of those who have been able to devote five years or so of their lives to the exclusive study of this science.

Nor did I mean to suggest that the State has endowed the medical profession with any privileges to which they are not entitled. What I did mean was, that quite apart from any "social contract," laymen trust doctors to do all in their power for the suppression of disease, independently of any social theories as regards which doctors and laymen are on equal terms. If it is ruled permissible for a doctor to withhold important medical knowledge from a layman, on grounds not connected with medicine but with social theories from which the layman may differ, then it at once becomes a matter of urgency for laymen themselves to acquire such medical knowledge as they can, and to take into their own hands that power of self-protection which is denied to them by the official repositories of medical science. And this can only be done by upsetting to some extent the existing relation between the public and the profession—by breaking down the absolute dependence of the former upon the latter.

The editor of *Downward Paths*, by some circuitous process of logic, arrives at the conclusion that I would also require a doctor to furnish information to patients on the methods of procuring abortion. I fail to see any shadow of an analogy. Society has determined that procuring abortion is a crime; by withholding information on this subject, doctors are not giving rein to any social fancy of their own; they are not the arbiters, for it is society at large which has decided that this thing shall not be done. In fact, your correspondent fortifies my argument, instead of weakening it; for my whole contention was that it is the prerogative of society, and not of the medical profession, to

set limits to the exercise of medical skill. Since the editor of *Downward Paths* is interested in analogies, may I present her with a better one? If, as she claims, it is right and proper for doctors to refrain from checking a particular disease on account of a personal whim, then they may also refrain from checking any other disease on similar grounds. They may decline to use the anti-serum for diphtheria or tetanus, because it involves vivi-section, of which they may happen to disapprove. They may refuse to a soldier the benefits of inoculation against typhoid fever, if they happen to think (as some Quakers do) that no man ought to go soldiering. And in general, once this principle is accepted, they may hold aloof from the best method of dealing with any disease on account of some conscientious twist which alienates them from giving the most efficient treatment, but with which the unfortunate patient is quite unconcerned.

Coming now to plain terms, it seems to me that those who wish to withhold from the public the knowledge of how to prevent syphilis lest the public should be en-couraged to vice, resemble those who used to advocate the doctrine of hell as an incentive against wrong-doing. It was a great comfort to the mediaeval moralist to adjure his audience that, if they did this or that or the other, they ran a grave risk of being consigned to perpetual flames. It was a great grief to him when that barbarous doctrine was at length exploded. So now those who arrogate to themselves the titles "conscientious," "moral," and "religious" are gratified to reflect that syphilis lies in wait for those who indulge in another kind of sin. Being offered by Metchnikoff the means of preventing and abolishing syphilis they cry out against the wickedness of any such proposal. Presumably if it lay with them to decide whether there should be a hell, that evil-doers might go there, they would advocate the proposal with all the intolerant bigotry that we are beginning to associate with the cries of conscience and of morals. We know, at all events, that if there were a hell, and if it lay with them to abolish it, it would not be abolished. To me the saddest feature of the present situation is this: That while we continue to talk about compulsory notification, about quacks, about punishing offenders; while we con-tinue to preach to young men, to harry prostitutes, to advocate continence, and to adopt all the other measures which during the past five centuries have so strikingly demonstrated their failure; while we have Royal Com-missions and public meetings, and talk, talk, talk—syphilis is growing fast throughout our country, spreading ruin, despair, and even suicide wherever it touches, because we have not the moral courage to take in hand the one effectual method of dealing with it so ably advocated by Sir Bryan Donkin and Dr. Mott. While we are chattering irrelevancies the devil is silently stalking through the land, securely smiling in the thought that our conscientious virtuosos will protect him from that smashing blow, the weapon for which lies feebly in our vacillating hands.—I am, etc.,

London, S.W., Feb. 18th. HUGH ELLIOT.

SIR,—I have read the recent correspondence on this subject with interest, and wish to express my appreciation of Dr. T. C. Mackenzie's excellent letter on the subject in your issue of February 3rd.

Sir H. Bryan Donkin and others urge that prophylaxis of these diseases is essentially a medical subject. No one is likely to dispute this, so long as a broad enough view be taken of what a medical subject includes and of what prophylaxis includes. But it is not exclusively a medical subject.

I would consider that the medical profession is con-cerned with the bodily and mental welfare not merely of individuals (women no less than men), but also of the race, and that no measure or influence should be neglected which is calculated to be of service. If, from this stand-point, we examine impartially the subject of sexual rela-tions, it will, I think, be evident that respect for moral and respect for physiological law attain the same result—the welfare of the race. The approach to the subject in the two cases may be from different sides, but the result is the same, and a breach of the one law will be found to be a breach of the other.

From the physiological side we may compare the pro-cesses of digestion and reproduction. They are both concerned with life—the one with the life of the indi-vidual, the other with that of the race. As the appetite for food contributes to the upkeep of the individual, so the appetite for sex contributes to the upkeep of the race. The eating of food which follows appetite is only the first of many stages in the digestive process which ends in the nourishment of the tissues. Any break in the chain of digestive events leads to sickness, disease, and death. Similarly, sexual intercourse, to which the corresponding appetite leads, is only the first of many stages in the generative process which ends in childbirth. Any break in the chain of generative events ends in failure of reproduc-tion, and the result of a sufficient number of such failures leads, as we know, to disaster to the race. But the welfare of the race is not achieved at the birth of the child. Its prolonged helplessness and slow development require the long-continued care and training to which both parents contribute, hence the manifest advantage of marriage from the physiological standpoint. So far, therefore, physio-logy and moral precepts are at one. Physiological law is evidently transgressed by solitary vice, by prostitution, by adultery, by illegitimacy, by checks to conception, and by artificial abortion.

In still another way, moreover, does physiology throw light on moral injunctions. The influence of the mind over gland secretions has been established by Pawlow and others. The imagination can summon glands into activity, and, as a reaction, the glands charged with secre-tion can stimulate the mind's activity in certain directions. This is the foundation on which rests the moral objection to suggestive books, posters, entertainments, and such-like. The harmfulness of these is to be judged by their sug-gestive effect on the individual. The mistake so often made is to ignore the danger of allowing the mind to dwell on suggestive images, whereas the real battle-ground for purity of action is purity of thought.

From these considerations, I hold that the medical profession can only hope to cope successfully with venereal diseases if it deals with the interests of both sexes equally and of the future race, on broad lines guided by physiology and aided by education and moral influence. These I take to be the principles which underlie the report of the Royal Commission on Venereal Diseases. It will, I am sure, be received gratefully by the bulk of the medical profession.—I am, etc.,

Edinburgh, Feb. 17th. CHARLES W. CATHCART.

SIR,—Mr. Hugh Elliot's letter (February 10th, p. 209) is very interesting as a "point of view," and as further evidence of even the educated layman's delusions as to the position of the medical profession in our social scheme. He appears to maintain that it is the duty of a medical man to give information to any one who may demand it, even though he knows that that information may cause injury, not only to the applicant, but to society in general, and may easily fail to prevent the evil which the applicant hopes to escape by its aid. Let us be quite clear. There is no "simple formula which will protect any one effectively against the infection of syphilis." When one is found, it will be time to reconsider the question, but at present the only safe advice is, "Don't expose yourself to infection, for infection is by no means confined to one part of the body, and, in spite of any simple formula, if you consort with prostitutes, you are likely to catch syphilis." To tell a young man that, with the aid of a formula, he can consort with prostitutes without risk of infection is to mislead him and to encourage him to wreck his whole future happiness and health, not by catching syphilis necessarily, but through the other evil influences of prostitution, some of which Mr. Elliot evidently recognizes quite clearly.

On the other hand, to point out to the applicant that we cannot guarantee immunity from syphilis by any formula, and that prostitution leads to many other evil effects on the health and happiness of others as well as himself, is to tell him the truth, and probably in some instances to deter him from indulging his desires. Mr. Elliot says, "We come to you for your medical knowledge," of which you are "trustees." The one piece of medical knowledge of which we are quite sure is that health and morality (public and individual) cannot be dissociated, and that they interact in many ways; and that, quite apart from venereal disease, prostitution is bad for individual and community alike—I mean, of course, purely from a health point of view, and quite apart from any question of religion. The financial trustee does not give his spendthrift ward blank

cheques on his capital, neither should the health trustee give blank cheques on his ward's vitality or future well-being. A trustee, however, is by no means always *persona grata* to his ward, and the medical profession must share the fate of other trustees if it is to do its duty. Neither in justice nor in kindness ought we to give bad advice to any one, and our advice should be based on our monopoly—medical knowledge.—I am, etc.,

Swinton, Feb. 11th. J. PRICE WILLIAMS.

THE MOBILIZATION OF THE PROFESSION.

SIR,—There is one aspect of the scheme for mobilizing the medical profession which appears to have been overlooked. I refer to the reserves. All military authorities realize that when their reserves are used up the position is indeed serious, and so it will be with the civil medical service, if I may use such an expression. Our reserves consist of gentlemen willing and able to act as locumtenents. What will be the position if they are all mobilized? In the R.A.M.C. occasional leave is granted during slack times. In towns short absence can also be obtained under similar circumstances. But in rural districts it will have to be fifty-two weeks a year, seven days a week, and goodness only knows how many hours a day, without any relief in sickness or in health, and it must be borne in mind that the men expected to do this are men who from age or health are considered unfit for active service.

I have myself recently had to carry on through a sharp attack of influenza. But in case of serious illness what will happen? Take my own district as an example: Before the war there were fourteen men in practice over a very scattered area. Seven of them have joined the R.A.M.C. Of the remaining seven one has been and is very seriously ill, and it will be long before he can attend to work again; and another has recently gone down with serious illness. At present they both have locumtenents. But when they cease to be available, what is to happen? The five men left cannot possibly do the work. Finally, what is to happen when the remaining five break down, also from overwork? I am sure there is not a man in the profession who is not willing to do all—even at the risk of health and life—for his country at the present time. But many of us left behind would much like to take a well-earned holiday by joining the R.A.M.C.—I am, etc.,

February 12th. A RURAL M.D.

THE APPLICATION OF SURGICAL METHODS TO THE TREATMENT OF CEREBRO-SPINAL FEVER.

SIR,—In reference to Captain Drew's logical suggestion as to continuous intrathecal drainage in cerebro-spinal fever, may I point out that in 1899 the late Mr. H. W. Allingham and I published a paper in the *Lancet* (vol. i, 1899, p. 889) on a case of "Cerebro-spinal meningitis treated by laminectomy, incision of the dura mater in the dorsal region, drainage, recovery, remarks." Before this date Waterhouse and Ord had successfully employed continuous drainage in cerebral tuberculous meningitis. In our case there was great difficulty in stopping the flow of cerebro-spinal fluid after the disappearance of symptoms, just as there was in StClair Thomson's cases of cerebro-spinal rhinorrhoea. In Heiman and Feldstein's *Meningococcus Meningitis*, p. 298, a brief reference is made to a number of surgical operations, in some of which an attempt has been made to secure permanent drainage, but the authors do not consider that any claim of permanent benefit has been established. Since the introduction of serum treatment little has been heard of surgical measures.

Captain Drew states that it does not appear that the injection of antimeningococcic serum "is more effective than simple tapping without it." It is true that this appeared to be so in the epidemic of 1914–15 in this country, a period during which the serum appears to have been devoid of antibodies; and Captain Drew's statement coincides with that of Foster and Gaskell in their recent monograph, also based on their practical experience of the 1914–15 epidemic. Since that was written Flexner's, Mervyn Gordon's, and others' serums have been available, and with their use the mortality of the disease has substantially diminished. It is important that the serum treatment of cerebro-spinal fever should not be regarded as futile because the serum was impotent in one epidemic.—I am, etc.,

H. D. ROLLESTON.

Royal Naval Hospital, Haslar, Gosport, Feb. 19th.

Obituary.

SIR BENJAMIN FRANKLIN, K.C.I.E.,

FORMERLY DIRECTOR-GENERAL, INDIAN MEDICAL SERVICE.

SURGEON-GENERAL SIR BENJAMIN FRANKLIN, K.C.I.E., I.M.S., died suddenly from heart failure on February 17th. He was born in May, 1844, and received his education at University College, London. He took the diploma of M.R.C.S.Eng. in 1867 and that of L.S.A. two years later; in that year he entered the Indian Medical Service. He was civil surgeon at Lucknow from 1878–80, and at Simla from 1881 to 1886. He was surgeon to Lord Elgin, the Viceroy of India, from 1894 to 1899, and had officiated as Inspector-General of Hospitals in Bengal 1897, the North-West Provinces and Oudh 1899, and in the Punjab 1900–1. He was Director-General of the Indian Medical Service and Sanitary Commissioner with the Government of India from December, 1901, to the end of 1905, and acted as British delegate to the International Sanitary Conferences in Rome in 1907 and Paris in 1911–12. The honour of C.I.E. was conferred upon him in 1896 and that of K.C.I.E. in 1903. He had one son, a lieutenant-colonel in the Indian army, at present in India, and two daughters, one unmarried and the other the wife of Brigadier-General Onslow.

The funeral took place at East Sheen on February 20th. Sir Frederick Treves represented Queen Alexandra, who sent a wreath with the inscription: "In most grateful recollection of the splendid work done and self-sacrifice made for the benefit of the Red Cross. From Alexandra." Mr. Hughes Wemyss represented Princess Christian, and Colonel Bate, Dr. Fox Symonds, Mr. D. Pennant, and Mr. F. Hastings represented the British Red Cross Society.

Sir FREDERICK TREVES, Bt., writes:

Since practically the whole of Sir Benjamin Franklin's medical life was spent in India he would be little known personally to the medical profession of the present day. Those who did know him were impressed by his varied and interesting knowledge of men and of affairs and were attracted by his amiable personality and geniality of manner. He was possessed of sound natural wisdom, of acumen and tact, and of that well-balanced judgement which constitutes the judicial mind. He was a man to be depended upon as well in the council chamber as in the minor concerns of life. The characteristic about him which first impressed the stranger was his courteous and indeed courtly manner—a manner which gave a certain old-fashioned dignity to all he did, and recalled a time, now rapidly waning, when it was said "manners makyth man." He spoke, as he thought, with deliberateness, while he would display, from time to time, a quiet humour which was very attractive. He was an excellent companion, and I shall long dwell with pleasure upon many walks we had together in Burma and in England and in the beautiful garden at East Sheen, which was the pride and joy of his life.

From the time of his returning to England, after his work as Director-General of the Indian Medical Service was over, he took the most practical interest in the British Red Cross Society. He was a member of the council and of nearly every committee. From the first outbreak of war until the very day of his death he devoted the whole of his time to Red Cross work. In this work his long experience as an administrator was of the utmost service. No man was more regular nor more punctual in his attendance at his office in Pall Mall, and there was no work that he was not ready to undertake, and none which he failed to do honestly and well.

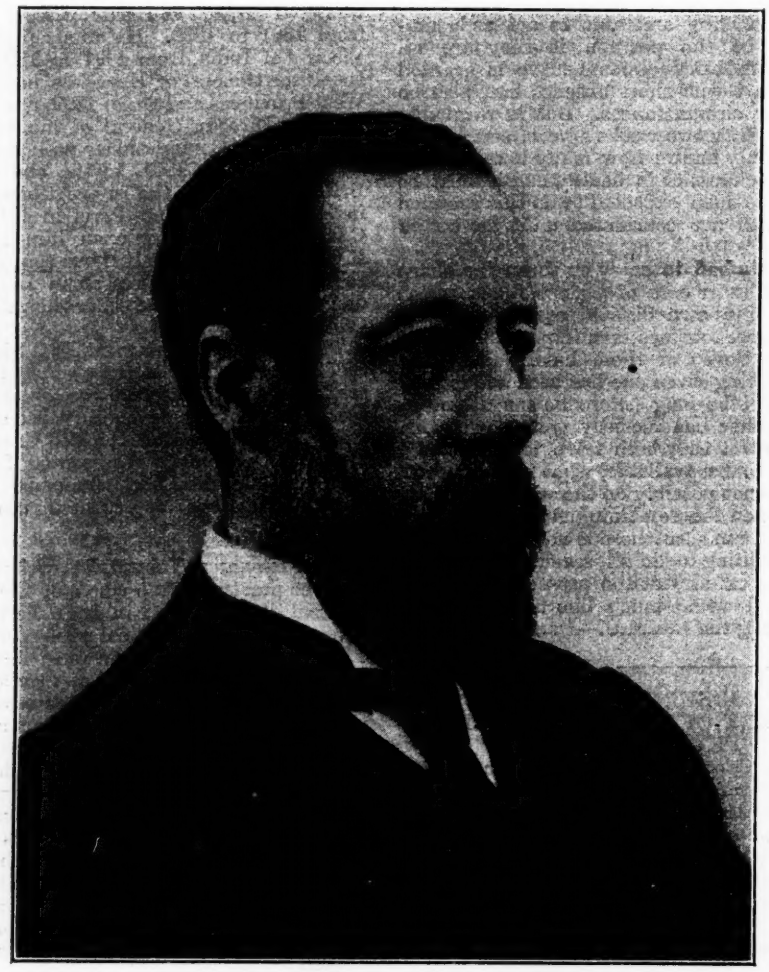
In September last he learnt that his heart was affected and that his time was short; yet every day found him in his chair at Pall Mall as busy as a man could be. He was at the Red Cross Head Quarters on Friday in his normal health. On Saturday he fell dead in his room in the act of dressing. He died as he would have wished to die, in the very height of his self-imposed service. As Berni says, "Andava combattendo ed era morto."

WALTER HAMILTON HYLTON JESSOP, M.A., M.B.CANTAB.,

SENIOR OPHTHALMIC SURGEON TO ST. BARTHOLOMEW'S HOSPITAL, AND PRESIDENT OF THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

WE regret to announce the death on February 16th, after a brief attack of pneumonia, of Walter Hamilton Hylton Jessop, President of the Ophthalmological Society, and senior ophthalmic surgeon to St. Bartholomew's Hospital.

Walter Jessop was the son of Mr. Walter Jessop, F.R.C.S., of Cheltenham, and was born in 1853. He was educated at Cheltenham College till his father died, when he was removed to the Modern School, Bedford, and having gained the Harpur Exhibition and the Tancred Scholarship in Medicine, which are held at Gonville and Caius College, Cambridge, he proceeded there in 1873. In 1876 he graduated in Arts, and entered St. Bartholomew's Hospital for the completion of his medical studies. He became M.R.C.S. in 1880, and four years later F.R.C.S.Eng. He graduated M.B. Cambridge in 1886.



DR. WALTER HAMILTON HYLTON JESSOP.

His first appointment in connexion with the school at St. Bartholomew's Hospital was as demonstrator of anatomy, and few surgeons, afterwards becoming well known in any special department of surgery, devoted so much time to anatomy as Jessop. In 1887–88 he was Hunterian professor of both anatomy and physiology at the Royal College of Surgeons of England, and he was for over ten years demonstrator of anatomy at St. Bartholomew's Hospital. For his Hunterian lectures he chose the subject of the intraocular muscles, while all his early writing showed the direction in which he proposed to succeed. As early as 1885 he read papers at the Ophthalmological Society on the use of cocaine in operations on the eye, and on the affections of the eye associated with herpes, while at the International Ophthalmic Congress in 1888 he read a paper on the physiology of the intraocular muscles, founded on his Hunterian lectures. He soon obtained appointments as ophthalmic surgeon to various charities—the Central London Ophthalmic Hospital, the Western General Dispensary, the Foundling Hospital, and the Paddington Green Children's Hospital, and in 1895 was appointed assistant ophthalmic surgeon to St. Bartholomew's Hospital. This appointment, which Jessop did not obtain without opposition and until he was over forty years of age, became vacant on the retirement of Mr. Henry Power and the appointment of Mr. Bowater Vernon to the senior post. Mr. Vernon retired in 1901, when Jessop became senior surgeon, a post which he was holding at the time of his death.

As will have been inferred from what has been already said, Jessop was first and foremost a clinical surgeon, and preferred to take his observations to the meetings of societies, where his conclusions could be criticized by his peers. He was the author of a *Manual of Ophthalmic Surgery and Medicine*, and contributed articles on the eye to textbooks of two of his colleagues at St. Bartholomew's Hospital.

Jessop's career was extremely honourable to himself: starting with no advantages except his own native ability and industry, he achieved conspicuous success in London, winning a high place in the estimation of his colleagues and earning also a distinguished position in the public eye, for at the time of his death he was actively conducting a very large practice.

Jessop had a very high conception indeed of the responsibilities of the ophthalmic surgeon, and it was his ideal to raise the standard of ophthalmic surgery not only in this country but throughout the civilized world by affording far more ready and easy means than as yet exist for interchange of knowledge between ophthalmologists. With this object in view he was a very punctual attendant at all international congresses, whether specially devoted to ophthalmology or holding sectional meetings in that science. He was known on the Continent to every prominent ophthalmologist, and was an honorary member of the Spanish, Belgian, and American societies, as well as corresponding member of the Buda Pesth Royal Society of Medicine. In order that the English share in international movements should not lose their force by diffusion or bad representation, he was very desirous that the Ophthalmological Society of the United Kingdom should be representative by inclusion within its field of the other ophthalmological societies of the country, and his work in regard to the recent merging of the three British journals—the *Royal London Ophthalmic Hospital Reports*, the *Ophthalmic Review*, and the *Ophthalmoscope* in one single journal—the *British Journal of Ophthalmology*—had the same object. At the arrangements precedent to this amalgamation Jessop laboured with extraordinary ardour, and it is good to remember that he lived to see his work widely appreciated.

Another side of Jessop's life was well known to his friends, and indeed to many of the art critics of London. He was a fine judge and discriminating collector of water colours and etchings. At all exhibitions, both public and of a private or semi-private character, Jessop's opinion was listened to with respect by lovers of art, and though he could be enthusiastic at what he considered the right place, his highly trained judgement did not permit this mood to be of frequent occurrence. His Whistler lithographs are famous, and he was justly proud of them.

MR. HOLMES SPICER writes:

From the time he left Cambridge perhaps the greatest interest in Jessop's life was St. Bartholomew's Hospital. After serving on the junior staff he was elected demon-

strator of anatomy in 1882, which post he retained till he became ophthalmic surgeon in 1894. It was during this time that he made lifelong friendships with colleagues such as Bruce Clarke and Lockwood, both of whom are now gone, but also with successive generations of Bart's men who owed much to his teaching. Life at this time was a struggle, there was no clear opening before him, it needed courage and tenacity to succeed. His election at Bart's was strongly contested, and it was only later that success came to him; with it the sunnier side of his nature developed, and his real character showed itself. There was a tradition in the eye department at St. Bartholomew's, and Jessop, who, though a Liberal in politics, was by nature conservative, set great store by the tradition; for example, it had been the custom to do the simple extraction of cataract without iridectomy, and Jessop followed the custom. There were ways of treatment, tricks of bandaging hallowed by custom and justified by experience, which he maintained through life. As a surgeon he rather followed the French school. He had received austere training at Moorfields under Nettleship and others which made his practice solid. As a colleague I can only say that during the sixteen years of our association we never had a disagreement, and rarely a difference of opinion; he was thoughtful and kind. As a story teller he could entertain one for hours with the peculiarities and weaknesses of the world, great and small; his method was impressionistic—a word, a half sentence, or a smile supplied the place of lengthy explanation. His love of art was genuine and enthusiastic. I remember spending a delightful afternoon with him at Sir Hugh Lane's collection of modern pictures in Dublin; although he did not himself practise any art, his judgement, taste, and knowledge were excellent. He loved to show his collections; his Whistler lithographs are famous. He would tell of the jealousies of collectors, and of a rival who, after offering very large sums for a unique specimen, finally handed him a blank cheque to fill in as he liked in exchange for the picture; that cheque was not filled in. At his country home he was always glad to see old friends or pupils, or to welcome distinguished foreign colleagues. The guest was free to follow his own way, to join him in a morning swim in the river or a hard spell of gardening. He lived the free life of the country whenever he could get away from his work, and took his full share as a county magistrate and in other ways in the social life of his neighbourhood.

LOUISA WOODCOCK, M.D., B.S.LOND., M.A.TRIN.COLL.DUBL.,

SENIOR PHYSICIAN TO OUT-PATIENTS, NEW HOSPITAL FOR WOMEN, EUSTON ROAD; PHYSICIAN, MILITARY HOSPITAL, ENDELL STREET.

THE New Hospital for Women has suffered an irreparable loss by the death from pneumonia of Dr. Louisa Woodcock, physician to out-patients to that hospital since 1907. Dr. Woodcock was at work at the Military Hospital, Endell Street, to which she was physician, when on February 12th she was taken ill. In spite of unremitting and devoted care she died at her house on the afternoon of February 17th.

Miss Woodcock was educated at the Ladies' College, Cheltenham, and then at Somerville College, Oxford, where, after taking the Honours Schools in morphology and zoology, she devoted another year to the study of philosophy. She entered the London (Royal Free Hospital) School of Medicine for Women in 1894, graduated M.B.Lond. with honours in Medicine in 1900, and M.D. in Branch I (Medicine) in 1904. After holding house appointments at the Royal Free and New Hospital for Women, Miss Woodcock devoted a good deal of time to pathology, in which subject she held the Mabel Webb Research Scholarship. She later held a research scholarship at the London School of Economics, as a result of which she published, with Mrs. Sidney Webb, a report on the domiciliary treatment of the sick poor under the poor law in the Report of the Royal Commission on the Poor Law in 1907. At the time of her death Miss Woodcock was senior physician to out-patients, New Hospital for Women, Euston Road, and physician to the Military Hospital, Endell Street, a post she had held since that hospital was opened in 1915. She also held the post of medical inspector to Bedford College and to the North London Collegiate School.

From her student days Dr. Woodcock's work was characterized by quick insight, accompanied by the most painstaking investigation of doubtful points in a case or problem. These qualities alone would have made her loss a grievous one, both to her colleagues on the staff of the hospitals to which she was attached, and to the profession generally. But she was far more than a wise and skilful physician—a strong personality, spiritual, selfless, far-sighted, dwelt in that slight frame. There was about her a poise, a sense of balanced judgement, which gave a restful finality to her opinion on any subject, a finality in which there was no shadow of the dogmatic. It seemed rather that, having the power of seeing truth, she quite simply revealed it, revealed it with a charm of manner, tinted often by delicate humour which made a talk with her a pure delight. Probably always frail, such was the power of her mind and spirit that the idea of ill health never associated itself with her in the thoughts of those with whom or for whom she worked. She loved the work, but as cheerfully as she daily took it up, so when the call came, she gently laid it down.

> Now keeps she tryst beyond earth's utmost Sea,
> Wholly at rest.

SINCE the death of Mr. J. Barrett Collyns, a second nonagenarian who studied at St. Bartholomew's Hospital in the Forties has passed away. Mr. WILLIAM PROWSE died at his residence in Clifton, Bristol, on February 5th, in his 92nd year. He enjoyed very good health throughout his long life until the end of January. On February 3rd he was able to go down to dinner, but two days later he expired in his sleep. His father was Dr. James Prowse of Bristol, and his three sons are all in their father's and grandfather's profession. William Prowse began his professional education at the Bristol Medical School in October, 1843, where he won the prize for general proficiency in the first and second year. He subsequently studied at St. Bartholomew's Hospital when Sir James Paget was warden. He took the diploma of L.S.A. in 1848—sixty-nine years ago. In the following year he became M.R.C.S., and then went into practice at Millbrook, Devonport. Afterwards he went to Amersham, Bucks, where he remained for many years, but later on he moved to Woolton near Liverpool, Weston-super-Mare, and, lastly, Brighton; he retired from practice about fourteen years ago, and spent the last ten years of his life at Clifton.

MAJOR R. K. KILBORN, M.D., who died at Kingston, Ontario, on December 3rd, 1916, had been the medical superintendent of the Royal Military College, Kingston, for seventeen years. He was born at Frankville, Ontario, and graduated from the Medical College of Queen's University in 1879. He first went into practice at Toledo, where he remained until 1891. In 1896 he returned to Kingston and went into general practice there, and three years later received the appointment of medical superintendent of the Royal Military College.

COLONEL JOHNSTON SHEARER, C.B., Bengal Medical Service (retired), died at Bridge of Allan, N.B., on February 6th, aged 64. He was the son of Mr. J. Shearer, of Aberdeen, and was born in that city on October 22nd, 1852; he was educated at Aberdeen Grammar School and University, where he graduated M.A., with honours in Natural Science, in 1873, and M.B. and C.M., with honours, in 1877. He entered the I.M.S. as surgeon on October 2nd, 1880, became surgeon-major on October 2nd, 1892, and lieutenant-colonel on October 2nd, 1900. He was placed on the selected list on July 14th, 1906, got a brevet-colonelcy on November 11th, 1910, and retired on December 6th, 1910. His whole service was spent in military employment. He had a long record of war service, including six campaigns, as follows: Egypt, 1882, medal and Khedive's bronze star; Burma, 1887–88, operations of the 1st and third Brigades, and with the southern Shan column, medal with two clasps; North-west frontier of India, Hazara campaign, 1891, clasp, and second Miranzai campaign, 1891, clasp; Waziristan, 1894–95, mentioned in dispatches, G.G.O. No. 473 of 1895, clasp; Tirah, 1897–98, mentioned in dispatches, *London Gazette*, April 5th, 1898, D.S.O., and medal with two clasps. He received the D.S.O. on May 20th, 1898, and the C.B. on June 26th, 1908.

Universities and Colleges.

UNIVERSITY OF BRISTOL.

THE following candidates have been approved at the examinations indicated:

FINAL M.B., CH.B. (*Part I only*).—D. G. Cossham.
D.P.H.—J. F. Blackett. (*Part II, Completing Examination*): J. M. Harper. (*Part I only*): I. B. Barclay.

Medical News.

SIR FREDERIC EVE left estate of the gross value of £52,853, with net personalty £50,105.

DR. G. A. CRACE-CALVERT (Ruthin) and Dr. R. E. Lord (Colwyn Bay) have been appointed to the Commission of the Peace for Denbighshire.

THE annual meeting of the Mental After-Care Association will be held by the invitation of Sir R. and Lady Armstrong-Jones, at 9, Bramham Gardens, South Kensington, on Thursday next, March 1st. The chair will be taken by the Lord Mayor of London at 3 p.m.

AT a meeting of the Pathological Section of the Royal Society of Medicine on February 13th Dr. H. S. Stannus communicated a case of congenital hypertrophy of the lower limb which occurred in a male native of the New Langenburg District, German East Africa, about 17 years of age. The right lower limb was longer than the left at birth, the disproportion being maintained during growth. The length as measured from the anterior superior iliac spine to the tip of the external malleolus was 101 cm., as against 84 c.cm. on the left side. Radiograms showed that the several bones participated in the enlargement.

ARMY COUNCIL INSTRUCTION NO. 210 OF 1917 (February 4th) authorizes the admission of any discharged soldier into a military hospital for treatment of wounds, injuries, or disease caused or aggravated by military service, provided there is a reasonable probability of the man's condition being cured or materially improved by hospital treatment, and that a period of three years has not elapsed from the date of his being invalided out of the army. The admission of a soldier, in accordance with this instruction, is to be reported to the Secretary, Ministry of Pensions, Royal Hospital, Chelsea. The man's pension will be at the maximum rate while he is in hospital, but will be subject to a stoppage of 1s. a day.

LADY TWEEDY presided at the annual meeting of the Royal Medical Benevolent Fund Guild on February 16th, when reports of the subcommittees were received, and Lady Bradford was elected president in succession to the Dowager Lady Broadbent. Lady Tweedy said that the need for new secretaries was illustrated by the fact that the Guild received applications for help from such widely scattered districts as the Shetland Isles, Wales, and Cornwall. The increase of applicants pleading for help had happily been attended by increasing support, and in two cases the Guild was benefited by gifts from the trustees of funds left for charitable purposes. This marked, it was hoped, the beginning of an important source of help.

THE usual monthly committee meeting of the Medical Sickness, Annuity and Life Assurance Friendly Society was held on February 16th, when Dr. F. J. Allan was in the chair. The large number of claims arising from influenza during the previous month caused the experience to be in excess of the expectation, but it was reported that these claims were now diminishing, and appearances pointed to the possibility of a normal spring. For the first time for many years the half-pay experience of the society had been less than the expectation, owing no doubt to the more careful and rigorous medical examination that was enforced after the first year or two of the society's existence. A new annuity table has been introduced, which offers most facilities required by members desirous of obtaining deferred annuities. The society, therefore, now transacts the three forms of insurance for which it was originally founded, that is to say, sickness benefit during incapacity while a member is in active practice; annuity when this sickness benefit ceases, and life assurance to his representatives should he die. The annual report for 1916, to be presented at the annual meeting of the members on March 27th, was considered. All further information may be obtained from the Secretary, Medical Sickness Society, 296, High Holborn, W.C.

Letters, Notes, and Answers.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are: (1) EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2631, Gerrard. (2) FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

QUERIES.

GARLIC IN WHOOPING-COUGH.

PERTUSSIS asks in what way the use of garlic, as described last year, is supposed to act as a specific in whooping-cough.

We referred the inquiry to Mr. Mark Hovell, who made the suggestion (JOURNAL, July 1st, 1916, p. 15); he has replied as follows: I believe the juice of garlic kills the micro-organism of whooping-cough, but in some cases this is not sufficient to reduce the swelling of the lingual tonsil, which, by touching the epiglottis, causes the cough, and therefore it is necessary to make applications to the root of the tongue with a strong astringent in order to stop the tickling. I find a strong solution of iron (240 grains to one ounce), made with equal parts of glycerine and water, effective and preferable to trichloracetic acid, as it does not cause the discomfort which sometimes follows the application of the other drug. Messrs. Hall and King, the Folkestone chemists, are making for me a preparation which will enable the juice of garlic to be taken by the mouth, which, if equally efficacious, will be better and more convenient than cutting the cloves into thin slices and wearing them between two pairs of socks, so that the juice may be absorbed through the soles of the feet.

ANSWERS.

INCOME TAX.

CAPTAIN R.A.M.C., who asks as to an assessment on his civil earnings, will find that the substance of the matter was dealt with in an article published in our issue of February 17th, p. 231, but reference is made to two specific points: (1) That deduction was refused for two-thirds rent and one servant; and (2) that from the eighteen months' account filed for reduction of the assessment to the figures for 1916 one half of the 1915-16 assessment was deducted. If our correspondent's locumtenent was living in the house we fail to understand the reason for refusing the allowance of the two-thirds rent, etc.; if, on the other hand, he was not residing in the house, there appears to be little or no ground for the claim. The question is one of fact—that is, to what extent the house was actually used for professional purposes. We do not quite follow the observations made on the second point, but if it is impracticable to file an account for twelve months—which the authorities apparently have the right to require—some adjustment of the eighteen months' account is necessary, and a deduction therefrom of half the assessment for the previous year does not seem altogether unreasonable.

LETTERS, NOTES, ETC.

THE PROPHYLAXIS OF VENEREAL DISEASES.

DR. R. R. RENTOUL (Liverpool) writes: For many years I have contended that we have been and are paying too much attention to the *treatment* of these diseases. In 1914 Metchnikoff and Roux showed that syphilis could be prevented. Their experience has been put into operation by different European and U.S.A. States. In 1907 I obtained reliable information relating to the German system of prevention, and this appears in my essay "The Prevention of Venereal Diseases" (Booksellers, Lord Street, Liverpool. 2s. 1d.). I then prepared a preventive outfit, containing drugs to prevent syphilis, soft chancre, and gonorrhoea; and if any doctor or chemist wishes to obtain a sample male box, I shall be glad to forward it on receipt of 5s. 6d. The prevention of venereal diseases will represent a serious financial loss to doctors, chemists, and others, as I have estimated that about £95,000,000 is spent yearly upon prostitution and its accompaniments in the United Kingdom.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Seven lines and under	0	5	0
Each additional line	0	0	8
A whole column	3	10	0
A page	10	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.